

AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

Vol. XLIII
Number 16

PUBLISHED WEEKLY AT 239 WEST 39th STREET
NEW YORK, OCTOBER 14, 1920

Thirty-five cents a copy
Three dollars a year

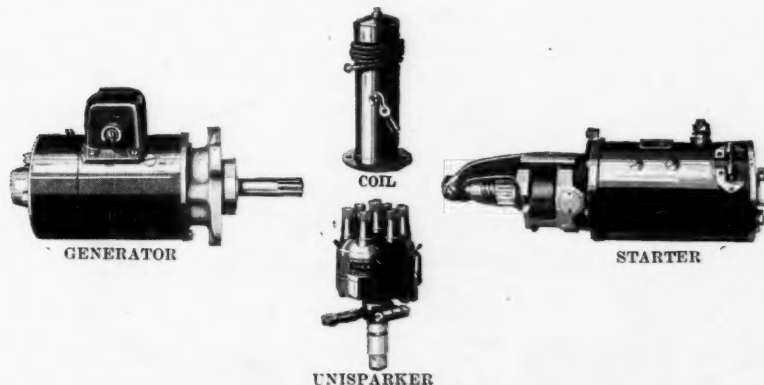
ATWATER KENT

Ignition, Starting and Lighting

Atwater Kent products have been prominent in the Automotive Field for 20 years. They are now standard equipment on 27 passenger cars, 7 trucks, 4 tractors, 6 farm lighting plants, 12 marine engines and motor boats. In addition there is a widespread demand for Atwater Kent Ignition Systems to replace magnetos and other equipment on engines in service.

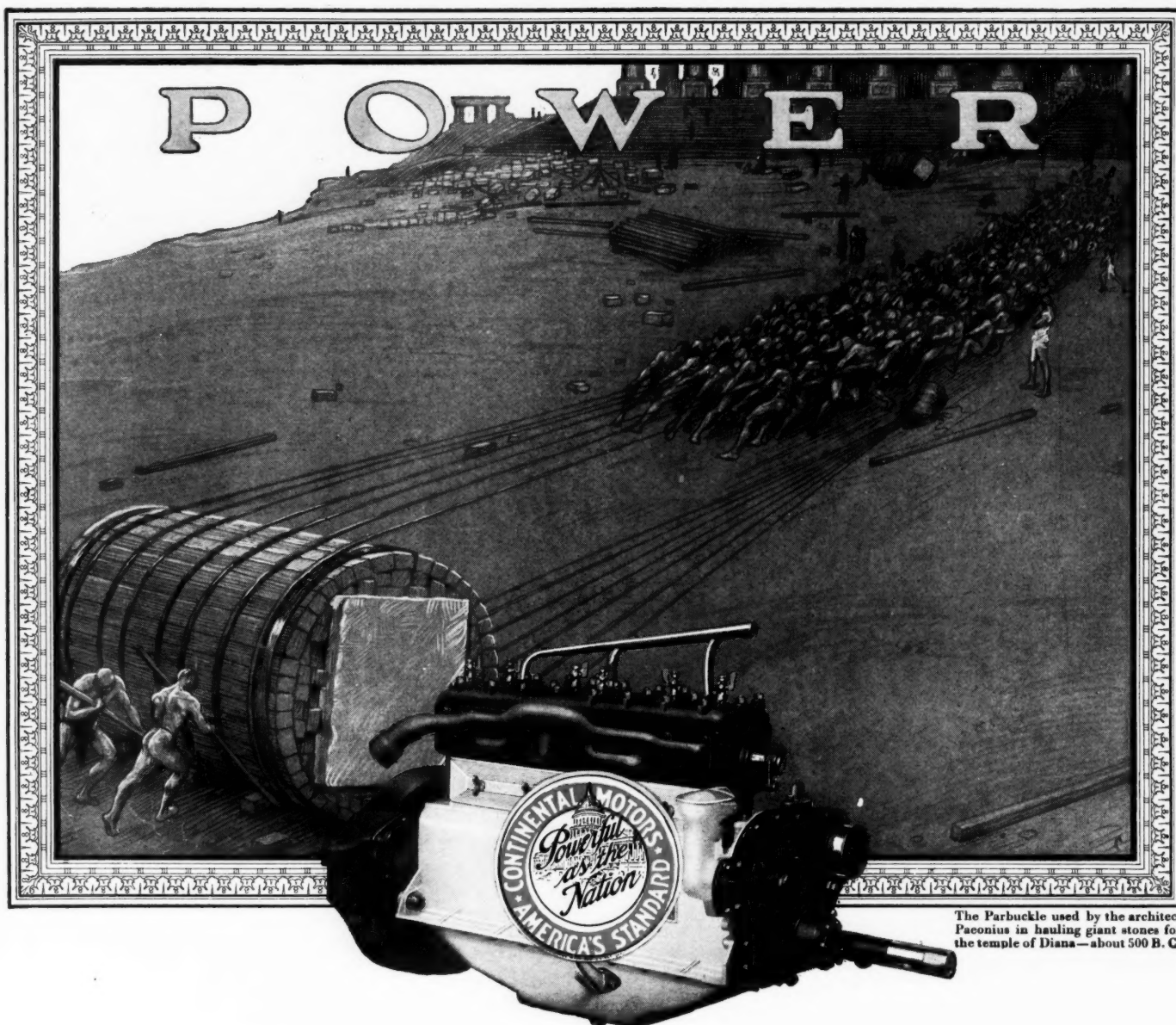
There are more than 750,000 Atwater Kent Ignition Systems now in use. Sold by 350 representative jobbers, 6000 progressive dealers and 150 expert service stations throughout the United States, with additional representation in Canada, England, Australia and the West Indies.

The name Atwater Kent stands for quality.



ATWATER KENT MFG. COMPANY

Philadelphia



The Parbuckle used by the architect Paeonius in hauling giant stones for the temple of Diana—about 500 B. C.

The outstanding characteristic that dominates the history of the development of power-producing mechanism, is the energy with which all creeds and all races have striven to achieve perfection. ¶ And the same characteristic is apparent today where Continental Motors are produced. Not only the

maintenance of Continental standards of quality, but the consistent development of the Continental product to keep pace with the march of the industry—THESE are the factors that assure the continued supremacy of the motor that is known everywhere by the mark on its crank-case—the Continental Red Seal.

CONTINENTAL MOTORS CORPORATION

Offices: Detroit, U. S. A.

Factories: Detroit and Muskegon

Largest Exclusive Motor Manufacturers in the World

Continental Motors

STANDARD POWER FOR TRUCKS, AUTOMOBILES AND TRACTORS

AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

VOL. XLIII

NEW YORK—THURSDAY, OCTOBER 14, 1920

No. 16

Export Trading Is Not an Impulse Undertaking

If you are going into foreign sales, you must lay out your campaign intelligently, and get the details settled, and then start for a long uphill pull with no results to be expected for several months.

By George E. Quisenberry*

IT is becoming increasingly apparent that the American automotive manufacturers are realizing more keenly the export obligations that rest upon them as the world's chief producers of passenger cars, trucks and tractors. With this comes the belief that many of these manufacturers are getting into what has been called "the foreign trade frame of mind," strengthening and expanding their selling connections abroad and undertaking their overseas business upon a firmer and more solid foundation.

A readjustment of our export business is in sight for numerous firms. The free and easy days of the last few years, in which trade came without the asking and the orders were filled without a thought of the future, are passing, if they have not entirely done so. The automotive exporter who could hang up his shingle one day and find his doorway crowded with frenzied buyers the next is discovering that he must go after the business instead of waiting for it to come to him. Shipments, in most cases, are no longer limited to the production that could be spared to fill them; their limitations are the producing company's

salesmanship abilities and the worth of the product it offers in its foreign markets.

In tribute, however, to those companies which have gone in to the foreign fields with ability and foresight, backed by a sturdy product and an even sturdier business policy, it should be said at once that they are suffering no lack of export business. These fine and representative producers are maintaining their sales and their trade with their overseas producers. They have, painstakingly and at a heavy cost, built up an edifice of trade that is weathering the present storm and shows little possibility of a let-up for at least years to come. Such companies have little to fear and much to hope of the future.

But, unfortunately, there are other companies which can look upon the present market with nothing but hindsight. Failing to sense the permanency of a market proffered to them during the hectic days when supply was lagging far behind the demand, they traded only on the hand-to-mouth and day-to-day policy. There have been such firms and there are such firms yet. In some instances, their shortcomings have been unintentional; in others, the plan doubtless

*Managing Editor El Automóvil Americano.

was to get what could be gotten while the time was ripe. Such firms are bound to disappear—some of them already have fallen from grace.

These firms have fallen of their own weight, not because of any lessening of the market potentialities but because of their own lack of foresight and ability. The markets of the world are in even greater need of automobiles today than they were a year ago or at the signing of the armistice. It is true, of course, that more cars and trucks are in operation throughout the world today than there were twelve, eighteen or twenty-four months ago. But, as in the United States, the sale of each additional car has made a market for one, two, three, perhaps five others.

This is more apparent, perhaps, in the more undeveloped countries of the world than it would be in the United States today. With little controversy, it may be said that the percentage of automotive increase in the coming years will be greater in many of the foreign countries than it will be at home. The present ownership in such territories is low; at home it is high. There, the potential use and possible gains, talking only in percentage terms, seems likely to be the larger.

That conservative banking firm, the Guaranty Trust Co. of New York, in an August bulletin made the seemingly surprising prediction that India within five years would have a motor population of nearly half a million passenger cars. To-day, its review states, the number of cars in India is probably about 30,000. These figures are important, not because they are definite and conclusive, but because they predict an increase that would be astounding, even viewed in comparison with that of recent years in the United States. From 30,000 to 500,000 in five years! Cut the expected goal in half, to a third or a quarter, and the outlook is nevertheless of the brightest.

But India is only one country. Look at South America. Look at Australia. Look at South Africa. Look at Asia. Look at Europe. Potential markets, all of them, just getting their first baptism of widespread ownership of the automobile. The Argentine, as one country, has perhaps 50,000 automobiles today and a territory that is comparable in size to the eastern half of the United States but much of it so far as agriculture is concerned resembles Iowa, Kansas and the other great Middle Western farm states. The only drawbacks to greater ownership in the Argentine have been three—lack of acquaintance with the automobile, the cost of imported gasoline and the lack of improved roads. What are its potentialities with these difficulties removed?

The first of the three is rapidly being overcome by the work of a few of our pioneering manufacturers who are introducing the passenger car, the motor truck and the farm tractor to all parts of that extremely prosperous and rapidly growing country. As the great oil resources of Latin America are brought into production—in Central America, Venezuela, Colombia, Peru, Bolivia, and even the Argentine itself—the fuel problem should find solution for itself and its cost greatly reduced. The road problem is also largely one of education and it is being met in various ways. Numerous indications point to expanding road activities and it seems almost certain that many new highways soon will be built, not only in the Argentine, but elsewhere throughout South America.

Europe faces exchange problems and temporarily many sections are out of the market. Norway has an embargo, as of August 18, against the importation of passenger cars and motorcycles, and England has decreased somewhat her takings of the higher priced cars. But the lighter cars are still being sold in gratifying quantities, with Ford keeping up production of a thousand cars a week at Manchester and a large output of tractors at Cork. Willys is turning out many cars at the new plant at Manchester.

Europe, however, is the one discouraging point in the world's market as it exists today for the American manufacturers. Others seem bright and full of promise. Conditions have become more settled in Mexico and visitors from there see nothing but continuing gains in car, truck and tractor operation. The new government has promised to build roads and develop the agricultural industries. Such development of course will carry with it the automobile and other power equipment. Gasoline is available in Mexico City in any quantity and, although there have been some increases in price, it seems yet to be low.

Throughout there is this feeling of future market growth, and exporters are optimistic that business will keep up on a thoroughly satisfactory basis. They expect changes and a shifting of conditions. Credits and financial arrangements may come up to be recasted and other trading conditions may see radical departures from those that ruled during the height of the rush of six or eight

months ago. But the future is as bright as ever.

Evidence is everywhere at hand of the expansion of our foreign trading companies. As has been stated before in *AUTOMOTIVE INDUSTRIES*, several companies have added export departments to their sales forces or expect to do so within the next few months. With lessened demand from the domestic markets, these companies are finding it possible to allot an adequate percentage of their production to the export requirements. With such a policy good results may be expected, provided the determination has been made to stick to the markets and afford it the necessary attention, service, etc.

There is in this one possibly serious difficulty. Some firms may count upon immediate returns and expect a volume of business as soon as the name exporter has been put upon its letterheads and business stationery. Some may hope to rid themselves immediately of any excess production that may be on hand and intend to drop the whole business whenever the buying of that particular car has again become heavy at home.

Foreign trade, it should be reiterated whenever the subject is up for discussion, cannot be worked up in a day, or even a week. Weeks must pass before even a reply can be received from the first letters. More weeks must elapse before the first order can be completed and further periods must elapse during which the marketed car must be serviced and kept in successful operation. Once it is started, it should not be stopped. A trader cannot jump into and then out of a market with any expectation of returning to it if the whim should strike him once more sometime in the future.

Such business, from its very nature and its complexity, demands care and careful attention. Intelligence should be exercised in the choice of dealers and distributors in the far-away markets and they should be changed only

THE export trade, which is now only in its infancy so far as automotive products are concerned, offers an attractive outlet for the excess production on which sales at home are lagging. More and more the American manufacturers are seeking this business, building up aggressive sales organizations and merchandising campaigns. It is only in this way that they may expect to build up a foreign trade that is worthy of the name.

because of necessity. In this respect, foreign trading resembles merchandising in the domestic markets. Similar principles guide the course of business and must be adhered to, with the difference that mistakes or faults at home may be quickly corrected whereas in the export field several weeks and months would be required.

Many companies have not prepared sales and service literature for their products in any language except English. This situation may be visualized by a consideration of the results of a foreign company endeavoring to sell its wares in the United States with all information concerning it written say in Spanish or French. It might attain some sale but it could not go before its potential market with any expectation of arousing purchasing interest or alleviation of the sales resistance that generally accompanies a foreign made product.

Some of the accessory houses are particularly unfortunate in this regard by failing to have foreign language wrappers and cartons for their products. Also,

many of them carry the American sales prices in dollars, a price that naturally cannot obtain in a distant market. Firms have gone blithely ahead with this sort of service for their export connections, wondering in the end why their first orders did not result in repeat calls. The reason probably had nothing whatever to do with the worth of the product; the determination in such cases must have been the seeming attitude of the company itself and the manner in which it conducted its overseas business.

Export trading is a big proposition. During the war and following the cessation of hostilities, it was easy. Orders came merely because the goods must be had from somewhere and because of the unusual demands. Conditions now are changing.

Many companies have realized this condition and have prepared for it. They are today reaping the harvest, with business continuing and prospects remarkable for a long continuation and future expansion. Such firms have achieved the "foreign trade mind."

How One Company "Went After" Foreign Business

SUCCESSFUL foreign trading must start with the foundation of every part of any transaction that enters into it. That is an axiomatic statement which may be made whenever the subject comes to the front, largely because there are firms which still persist in treating their overseas business as though it might be done with a rubber stamp and a "lick and a promise."

The elements of confidence and mutual trust—factors that always should accompany good business—must be ingrained in the business of any exporter and manufacturer who expects to build up an overseas trade that will weather the storms of time. Therein is comprised the failure of the rubber stamp.

Several months ago, an importer of American automobiles in a foreign country sought the addition to his line of a certain class of car on which there was a heavy demand in his country. With that thought in mind, he took steamer and some days later reached New York. After some difficulty he found a suitable car that was unrepresented in his territory and which, from consideration of performance and price, should command an imposing sales volume.

This dealer, whose credit has been well established and concerning whose ability to sell cars there can be no doubt, attempted to get in touch with the manufacturers of the desired car through men in the automotive industries in New York. This attempt to obtain information concerning the car, and particularly representation of it abroad, was made both by telegraph and mail. But unfortunately no answer was received. The factory made no reply and the dealer was of course forced to seek elsewhere for the car that he needed.

Had the matter dropped at that point, it would have been presumed that the factory either had made other arrangements for representation in that territory or that it did not desire any export business at that time. Either assumption would have answered, although not excused, the lack of courtesy in not answering the buyer's communication. However, there is an aftermath.

The dealer returned to his own country, thinking of his experience with no more than a bad taste in his mouth. But some weeks later he received a letter of which the following is a copy:

"Kindly pardon our seeming neglect on account of not answering your correspondence, telegrams, etc., more promptly. We have been reorganizing our company here and we are now all ready to do business in foreign countries and have cars to make deliveries. We are painting our cars now ——— and are going to put on the market the classiest —cylinder

manufactured in its class. If you are ready to do business with us and can take cars, we are all set to go.

"We wish to sell our cars f. o. b. ———, and if we make any changes, such as right-hand drive and magneto on the car, we will have to ask an advanced deposit before making any deal whatsoever.

"If interested, we are now ready to take the matter up promptly and your correspondence will have immediate attention."

The communication apparently was a form letter. The address was not even in the same color ink as the body.

As a problem in psychology, just what do you think of the foundation upon which this company is "all set to go" on foreign business?

The Automobile in New Zealand

AREPORT upon the automobile in New Zealand was made by Consul General Alfred A. Winslow, of Auckland, in the daily publication of the Bureau of Foreign and Domestic Commerce of Oct. 9. Writing under the date of Aug. 5, from Auckland, Consul Winslow declared that the number of automobiles in New Zealand had reached a total of 30,000, the increase in the first six months of this year having been in excess of 6000. The statement is made that the car population of the island has expanded about fifteen fold in the last ten years, the heaviest percentage having been in 1919 and 1920. The car population in 1910 was no more than 2000, Consul Winslow reports, and this number was enlarged to 23,000 by the end of 1919.

The yearly imports of automobiles from the United States, with the exception of 1920, for which only partial figures are available, ranged from 7399 in 1915, the largest year, to only 3094 in 1918. In 1919, the number was almost doubled over the low figures for 1918, with a total of 6100. The first six months of this year, however, reached the figure of 6194.

"The motor car dealers state that orders are on file for all cars brought in long before they arrive, and the gasoline and motor spirits are doled out (at about 60 cents per gallon) on orders from the Board of Trade," he writes. "There has been a shortage almost continually during the past eighteen months."

Fuel imports, however, are increasing the report shows. For 1919, the total imported was some 8,934,518 gallons, whereas for the first six months of 1920 7,733,355 gallons were brought in.

The N. A. C. C. Resumes Export Managers' Meetings

Information developed at first of new series of foreign trade conferences indicates the need of important executives of factories are the men who must study the world wide trade fields and that they should keep in touch with politics and economic conditions that will govern.

By David Beecroft

THE necessity of automotive manufacturers sending higher executives to foreign countries to investigate markets and have charge of the establishment of agents, in order that our export trade develop on a more permanent basis, and in order that we can better meet the competition of European manufacturers who are now making deliveries, was the dominant thought at the Export Managers' Convention of the National Automobile Chamber of Commerce, which was attended by over 100 delegates. J. Walter Drake, chairman of the N. A. C. C. foreign committee, presided. It was a one-day session presided over by J. Walter Drake, chairman of the Foreign Trade Committee of the Chamber.

That American manufacturers and that American prestige have suffered because of the acts of minor officials who have been sent to investigate foreign fields, cannot be disputed. Too frequently the work has been in the hands of hirelings whose sole object has been that of obtaining immediate orders, without thought of laying the permanent foundations for trade.

Too frequently the minor executive and the hiring overlook potential markets which can only be fairly judged by the leading executive who is thoroughly familiar with every aspect of the business and who has a vision of business that can be developed from certain fundamentals.

The consensus of opinion at this convention was that while the lapse in automotive business has girdled the entire world, that it is only temporary and does not mark the end of our export business. Each country has its particular reason for a slowing up to-day. Argentina has more gold than ever in its history, but the exchange is unfavorable. The country has had an exceptionally dry winter and there is some uncertainty concerning the wheat crop of the coming summer. Two months will tell the story. In the meantime there is a heavy demand for automobiles in Argentina. Recent oil wells have indicated that at Rivadavia, in Southern Argentina, there are much greater quantities of petroleum than heretofore recognized and it is of a better quality.

Europe's Factories Active

At the same time our export problem in Argentina is more acute than it has been. Such European cars as Lancia, Fiat, Renault, Austin, Rolls-Royce and Vauxhall are on sale. There was a parade of twenty-eight new Fiats up Avenida de Mayo, the main street of Rio, one shipment from the factory. On another day twenty-two Lancia cars were paraded in a similar way. Our representatives in Argentina do not think European competi-

tion can injure the trade in low-priced American cars, but expect that in the next three months those selling high-priced American cars must actively sell, rather than fill export orders.

Brazil is a great selling field, but at present the exchange is equivalent to adding 38 per cent to the cost of the car. Coffee, which is practically an 80 per cent factor in Brazilian economic life, has dropped in price to such an extent that the government has stepped in to save the day and is prohibiting the exportation of it. At the same time there are many sections in Brazil where there is good business and unless the leading executive of a company has made a study of the country, the home organization is not in a position to properly realize if Brazilian trade is where it should be.

There is a general movement for good roads throughout Brazil which is supported by the entire Brazilian Congress, from President Pessoa down. An example of how new territories in Brazil are being developed is Pernambuco on the east coast, which is one of the biggest sugar areas in Brazil, but an area without good highways. C. J. Lucas of Buenos Aires, who is in this country on a business trip, stated that Ford is selling 105 cars, 35 trucks and 22 tractors a month in this area. Brazil holds the greatest future of all South American countries.

Danger of a Contract

Why leading executives should give more attention to foreign trade is demonstrated in the recent action of the Uruguayan government, which has been aroused by the reported action of an American manufacturer having canceled a contract with a Uruguayan dealer after getting him heavily stocked with cars. The Uruguayan government has ruled that no contracts can be made with a citizen of Uruguay having a 60-day cancellation clause. Mr. Lucas reports that the entire country is stirred up on this subject and that unquestionably the prestige of American cars suffered because of this action, and he looks for dealers in many South American countries who have been dissatisfied with the 60-day American clause to turn to the representation of European cars.

There is necessity for contracts in Spanish for Spanish-speaking countries and in Portuguese for Portuguese-speaking countries. He cited one example of a clause in one contract requiring specifications on the number of limousines that should be shipped and that these specifications should be given to the factory in October and November. As the winter south of the Equator is in June and July, at

which time the necessity for limousine cars exist, the absurdity of requiring specifications in November can be realized.

The value of Mexico as an automotive consumer was outlined by J. F. Barry, who has spent many months in the country and declares there is more optimism in Mexico to-day than there has been for 10 years, and that Mexico lying right at our door has more undeveloped and accessible wealth than any other country in the world. Mexico has not been torn asunder by the revolution so much as we may have concluded from the newspaper reports. Mexico City is to-day as quiet and safe a city as New York. Mexico is the only country to-day on a currency basis. There is no paper money in circulation. Exchange is favorable with business for Mexico.

The possibilities of trade with Mexico were indicated by statements that in sugar lands alone Mexico has five times the sugar area of the entire Island of Cuba. It is true that many of the sugar plantations were destroyed during the war and that much machinery is needed to restore them. Mexico seems to have come to a realization that she has lost heavily by the revolution. She failed to profit during the war by not being able to take care of trade she might have had.

In the oil fields Mr. Barry states that if all the oil wells were worked that Mexico could export a quantity equal to the entire oil production of the United States. The new government has practically pledged itself to revise the oil laws so that discrimination against America will be at an end.

Mr. Barry reports 6112 automobiles in the city of Mexico, of which 2500 are Fords. In the city there are also 133 motor trucks and 6700 horse vehicles. There are 6000 horse wagons, 1400 horse cabs and 1367 private horse vehicles. Mexico City is not only the political but also the industrial and financial center of the country.

Franklin Johnston, publisher of the American Exporter, who is just back from five weeks in Europe, in which he was studying general conditions and not automotive conditions, says that England is just as important in a financial and world trade center as she ever was, but that as a competitor of American products she is not so strong as previous to the war. Belgium has made amazing development, showing how she profited by the war. In her telephone service 80 per cent are in use. She is sending more telegrams and more telegraph equipment is used than before in her history. The visit of King Albert to Brazil was largely a great bargaining trip to have the Port of Antwerp made the coffee center of Europe so that all coffee would have to go through Antwerp. Belgium's coal industry is 98 per cent normal. Her textile industry is 70 per cent normal. Her shipping trade in September was 75 per cent normal.

France is rapidly reclaiming her devastated areas. So far as Europe is concerned no matter what happens temporarily, our foreign trade with Europe is not going to die out.

An interchange of commodities must continue and export trade expectations can well be based on the fact that increasing of exchange of commodities is the history of civilization.

The necessity of having our own ships for the distribution of our merchandise to the different countries of the world was well illustrated by R. A. Dean of the U. S. Shipping Board when he compared a manufacturing country, with an export trade but without ships, to a large department store in one of our cities which did not have a fleet of motor vehicles to distribute the goods

after they were sold. In 1916 our merchant marine was approximately a million tons, and to-day it is 12,000,000 tons and second to Great Britain. Approximately \$3,000,000,000 have been spent in ships. Up to this time the Shipping Board has sold 3,000,000 tons of ships, and it will take approximately five years to dispose of the entire fleet. The lack of personnel to handle the ships is the greatest handicap to-day.

Edge Law Banks

The financing of foreign trade is one of the most serious problems that lies ahead and one that demands the attention of the chief executives. B. P. Kennedy, vice-president of the First Federal Banking Association of New York, told how Edge banks were intended to assist. He is of the conviction that much progress must be made in the financing of foreign trade if we are going to compete with foreign countries that have practiced financing for many years. Great Britain has financed by acceptances and the Edge banks will make it possible for this form of financing to be carried out. Credits of longer than one year cannot now be handled by these banks but will be in the future. There is a possibility that debenture financing, which has also been handled in England, will have to be taken up by the American manufacturers.

Mr. Kennedy looks for a change in general conditions to take place in the next few months. One of the most hopeful conditions in foreign trade is that all countries engaged in manufacture to-day must work to improve the general economic conditions of the world. Unless international co-operation of this character be carried out, there will not be much foreign trade for the different manufacturing countries to work for. It will be necessary to carry on until after the coming Presidential election when it is hoped some definite foreign policy will be evolved.

U. S. Is Tariff Leader

Louis Domeratzky, chief of the Division of Foreign Tariffs of the Bureau of Foreign and Domestic Commerce, says that all countries in the world are considering tariff revisions and that the action of the United States is being watched very closely. Previous to the war European nations looked to Germany to set the style in tariffs, but now that Germany is out of the foreign trade field, the nations are looking to the United States. Mr. Domeratzky objects to the term "bargaining tariff," and advocates a broad economic policy of the United States toward other countries. He is of the personal opinion that retaliatory tariff measures such as a 25 per cent surtax against countries not giving us what might be designated as the most favored nation treatment is not a satisfactory way to proceed. The industry should cultivate closer relationships with Congress and sell the members of Congress to business requirements. Instead of the terms "bargaining tariff" we should adopt some other name as this phrase tends to arouse antagonism. He recommended that different industries co-operate in the tariff problem.

T. S. Barbier, representative of the General Motors Export Co., read a statistical article on South Africa. It was unfortunate that his voice did not carry through the meeting room. There appeared to be an intense interest among those present in his topic, but he did not get his facts over with the crowd. Also it was with the greatest difficulty that those present were able to follow Mr. Barry's remarks.

Two resolutions were adopted by the meeting. The first urged that this country give more attention to reciprocal business treaties and the second endorsed the work of the Bureau of Foreign and Domestic Commerce.

Mercedes-Knight Shows Many Detail Improvements

The timing gears are located between cylinder pairs, instead of in front, which makes for convenience in the accessories drives. A foot operated oil pump supplies extra oil to cylinder sleeves, steering gear and the rear system. American Bosch starting and lighting generator.

By H. F. Blanchard

THE first Mercedes model to be received in this country since the war is the 16-45-hp. four-cylinder Knight now on exhibition in the New York showroom. In a general way it resembles the pre-war Knight, but it has a number of small improvements of more than usual interest.

The engine is a four-cylinder silent Knight with a bore of 3.94 in. and a stroke of 5.12 in. (100 x 130 mm.). Tires are 34 x 4½ and the chassis is made in two wheelbase lengths, 116 and 128 in., both retailing for \$7,875 f. o. b. New York City.

As might be expected, this model has a starting and lighting system. Starting motor and lighting generator are made by the American Bosch Magneto Corp. The magneto, however, is an imported Bosch ZR4. It is a single spark design with provision for running or starting on the battery by a turn of the switch on the cowl.

All auxiliary units are driven from gears located between the two cylinder pairs. The eccentric shafts themselves are driven by gears between the two cylinders and not at the front as is usual. The generator is mounted on the aluminum crankcase forward to the right. It is strapped to the side of the crankcase, the steel strap being drawn up by a setscrew and held with a locknut. The starting motor pinion meshes with teeth on the flywheel. The starter is located at the left rear and is reached for inspection or cleaning through a hinged hand hole plate fitted into the mud pan and locked by a snap catch.

An interesting feature is the placing of the starting motor button on the cowl board. Here also are grouped

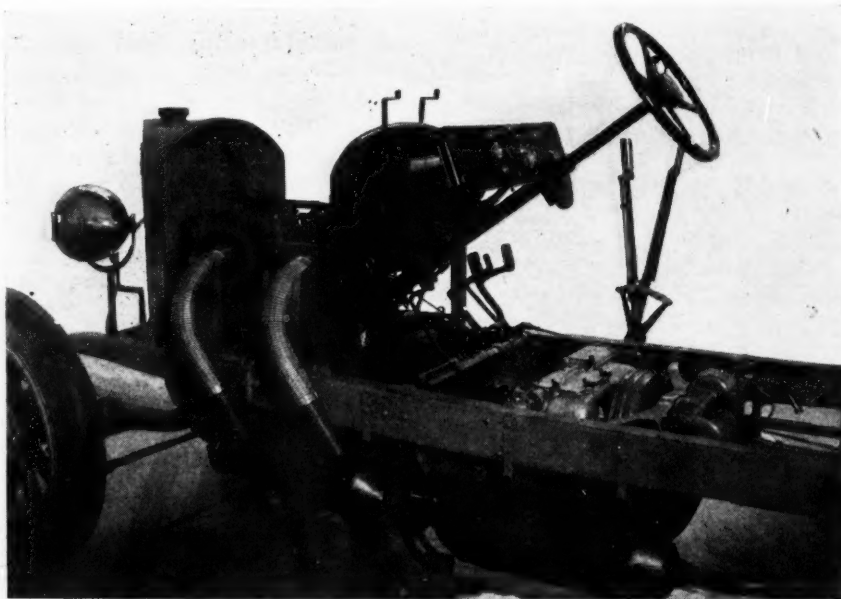
the lighting and ignition switches, fuses, and ammeter. A key in the center controls the ignition current battery to the left and magneto to the right—while turning of the switch knob regulates the lights. The starting battery is carried in a cradle at the right side to the rear of the gearbox.

The details of the oiling system are particularly noteworthy. The auxiliary oil tank, instead of being placed below the frame, is now mounted between the cowl board and the dash. It is oval and holds about 3 gal. Oil is

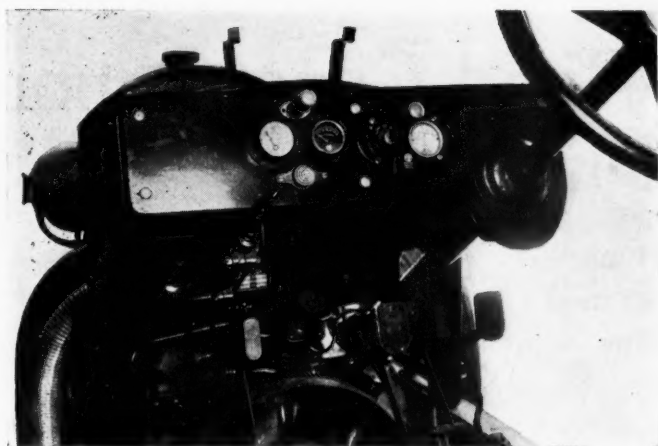
forced from it to the engine sleeves, the steering gear and the rear axle unit by depressing a button on the floor. There are three main oil leads from the pump actuated by this button. One runs directly to the ball joint which forms the front end of the torque tube, another runs to the steering gear housing and the third divides into eight branches which terminate at the head of the sleeve and the side of the sleeve on each cylinder. This arrangement naturally simplifies the work of oiling the car. At the same time the ease with which the pump may be operated makes it an ideal

means for lubricating the cylinders during a hard, long pull or continued high speed. Since the universal joint, torque tube and rear axle are practically one unit, all the working parts in them are supplied with lubricant through the one lead which enters the ball joint housing. This tube, by the way, is of flexible metal covered with a rubber-like substance.

Nothing has been overlooked to facilitate the oiling of the car. The single bearing on the water pump is lubricated by a grease cup which is conveniently mounted on



Mercedes-Knight chassis. Among the features seen in this view are the dual exhaust pipes with outboard expansion chamber and muffler, the fan spoked flywheel, pedals mounted on a tubular cross member, external transmission brake with finger wheel adjustment, the forked, Mercedes type central cross member and the spherical torque tube support



Mercedes-Knight instrument board and control members. Note grease cup for water pump bearing on left, fuel tank hand air pump, oil pump button and three pedals

the instrument board. It is of large capacity and should not require filling oftener than once a month. The oil level in the engine may be determined by means of a three-way valve just back of the carbureter. A turn of the handle opens a drain valve in the base of the crankcase.

Spring bolts and similar parts are lubricated by grease-cups, but these are of unconventional design in that they are provided with hexagonal heads so that they may be turned with a socket wrench. This makes it possible to force grease to the bearings under considerable pressure.

The carbureter is a new and very compact design. It has no adjustments and consists of little more than an annular float chamber surrounding the intake air opening. The float chamber is fitted with a breather hole which is covered with a fine mesh brass screen. Since the float chamber is completely inclosed the breather is necessary to provide atmospheric pressure therein. A commendable safety feature is found in the shape of an overflow drain from the float chamber. Usually when a carbureter floods the fuel drops into the mud pan where it sometimes causes a fire. In this design, however, the hot air pipe completely incloses the bottom of the carbureter and there is a small drain pipe running from this pipe down through the mud pan, so that any overflow of fuel is discharged directly to the ground.

The air heater consists of a jacket which incloses the separate exhaust pipe extending from each pair of cylinders. A short branch pipe connects the stove with the carbureter intake, this pipe passing between the cylinders. The carbureter end of this pipe is slotted and there is a rotating slotted sleeve to correspond. Movement of this sleeve regulates the quantity of hot air, the remainder of the air being cold air drawn in through the slots. Regulation of this sleeve is from the instrument board.

Air pressure is supplied to the 28-gal. rear-mounted

gasoline tank by a single cylinder air pump at the rear of the left eccentric shaft. There is a simple hand wheel adjustment on top of the pump for regulating its pressure. Initial pressure for starting is obtained through the use of a hand pump on the instrument board.

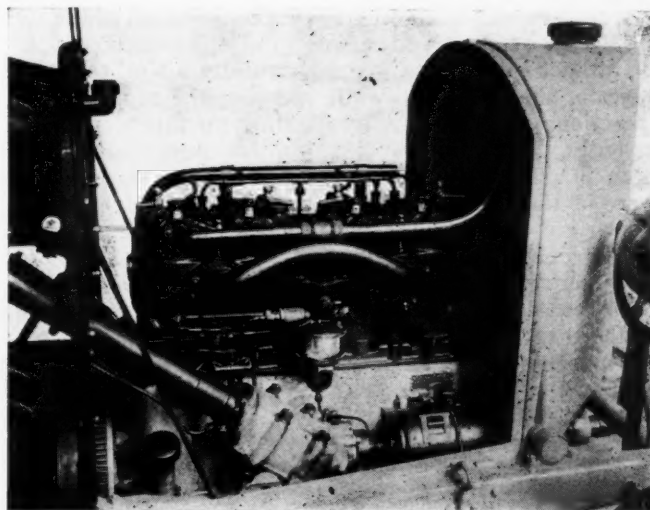
The cooling system is pump-operated. The water pump is a centrifugal type and is of interest because it has no front bearing and the inlet is directly at the center of the pump housing.

The radiator cap is unique. Particular pains have been taken to prevent syphoning action of the overflow pipe, or the loss of water through this pipe from slopping. The overflow pipe, instead of being on the side, is placed directly in the center of the filler opening. The filler cap is fitted with a recess which fits closely over the end of this pipe. The result is that when the water rises in the radiator it must pass through two sets of small holes before it can reach the overflow pipe. One set of holes is in a disk in the cap, and the second set is in the top of the recess just mentioned.

The clutch is a double cone type mounted in the flywheel, the clutch spring being placed between the two cones.

The gearbox is located amidships and has four speeds forward and one reverse. The shafts are mounted on annular ball bearings. The service brake is at the rear of the gearbox and in front of the trunnion support. It is adjusted by a large handwheel. The front of the torque tube terminates in a large ball which incloses the universal. The ball socket is bolted to the trunnion.

The rear axle and other chassis parts are of conventional Mercedes design.



New Mercedes-Knight engine. Note the carburetor with concentric float chamber, carburetor drain to below mudpan, generator drive from centrally located timing gears and oil drain valve handle in accessible position

The Use of Etched Balls in the Brinell Test of Hardened Steels

AT the request of the chairman of the Hardness Committee of the National Research Council, the device described by Hulgren for obtaining impressions with etched balls in the Brinell hardness test was examined in detail by the Bureau of Standards.

Briefly this method of testing consists in etching the steel ball with which the impression is made for a minute or so in a weak (2 per cent) alcoholic-nitric acid solu-

tion, after which the test is performed as usual. If the specimen, the hardness of which is to be determined, is in a polished state, the impressions with the etched balls are very distinct, while those with an unetched ball are almost invisible when viewed at certain angles. If the specimen to be tested is not polished, however, preliminary etching of the ball does not appear to be of much advantage.

Italians Adapt Semi-Rigid Construction to Large Dirigible

Several novel features are found in this machine, which was designed for a trans-Atlantic flight but may not be so used. Power installation so arranged that each pair of engines operates without affecting other pair. Each engine is provided with propeller directly coupled to crankshaft.

By A. and D. R. Black

THE Italian semi-rigid Uselli airship "Roma," technically known as Model T-34, was flown experimentally some weeks ago, and a description of this interesting development has reached this country. The Uselli airship derives its name from a wealthy Italian business man, who constructed it in collaboration with the engineer Prassone, Colonel Crocco, and some others.

This ship, which is the largest semi-rigid ever built, was designed originally for the purpose of flying across the Atlantic. The performance of this feat has not been definitely decided upon owing to the fact that there appears to be no material gain in such a flight except for demonstrative effect.

Italian airship designing has taken the trend of the semi-rigid type of construction, and the Italian engineers claim that this construction gives practically all of the advantages of the rigid ship while reducing the expense of construction and considerably speeding up this work. Until recently, the smaller airships built in most countries have been of the non-rigid type, whereas the larger airships were of the rigid or Zeppelin type. The construction of a semi-rigid airship of a size comparable with the larger rigidly constructed by British and Germans will, therefore, be of very great interest to aeronautical engineers, and the performance of this ship will undoubtedly be carefully watched throughout the world.

The general arrangement of the airship is shown in the accompanying photographs, and the following description is based on information received from Italian officials.

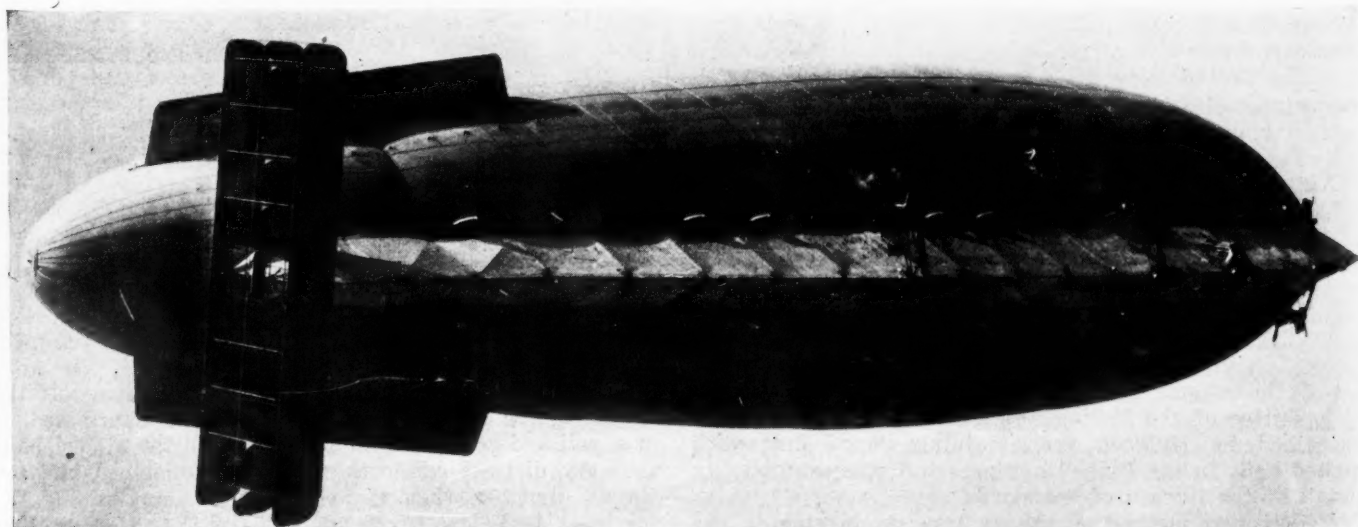
The envelope carries 12 gas ballonets and 6 air ballonets. Each of the air ballonets has its own air manifold and two controllable exhaust valves. Under the envelope there runs, for practically the entire length of the ship, a rigid triangular girder, the apex of the triangle pointing downward. This girder has 12-in. sides and is constructed of steel tube. The tube connections are articulated with the object of avoiding secondary stresses and to insure all members of the structure acting as struts without adding the complication of eccentric loading such as might otherwise be caused.

The upper part of the envelope is formed very much after the Astra Torres design, although of smaller proportions.

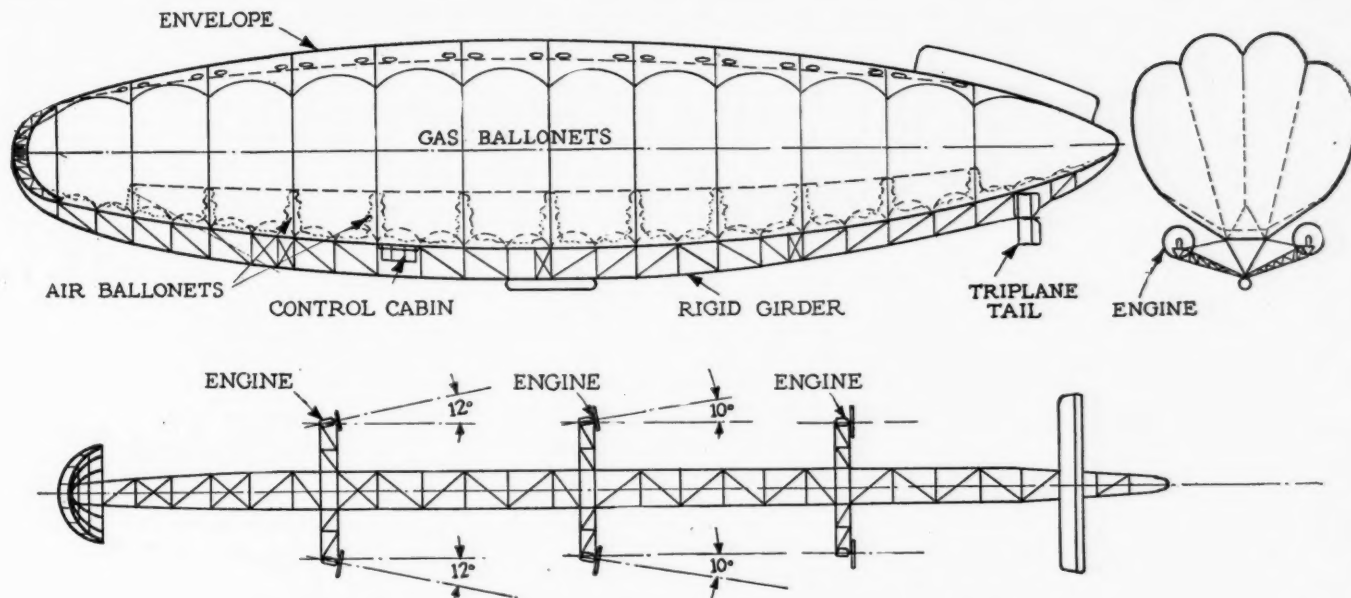
The nose of the ship is braced to prevent collapse when traveling at high speed, this being accomplished by forming the fore part of the girder or main beam into the shape of a large braced cupola.

The main girder is constructed to provide for the suspension of a salon capable of carrying comfortably twenty-five passengers.

The powerplant consists of six 12-cylinder, 400-hp. Ansaldo engines placed in pairs near the forward, center and aft parts of the ship respectively, giving a total of 2400 hp. The designers are, however, considering the installation of the Isotta-Fraschini 260-hp. engines in place of the Ansaldo's. The engines, together with their radiators, are located on cantilever supports, supported from the main girder. The forward pair of engines is set at an inclina-



Showing underneath construction of Italian T-34



Cross-section and plan views of the Italian dirigible T-34

tion of 12 deg. in plan view, as shown in the drawing, while the second pair is set at an inclination of 10 deg., and the rear pair is set with the axes parallel to the longitudinal axis of the ship. The intention of the designers in so arranging the engines was to obtain a powerplant installation such that the operation of any one pair of engines would not interfere with the operation of another pair. Each engine is provided with a propeller directly coupled to the crankshaft and of a diameter of 11.48 ft.

The control cabin is located in the triangular girder and steering is accomplished by the operation of two control wheels. The fuel tanks are cylindrical, 2 ft. 2 in. in diameter and 3 ft. 7 in. in height. The water ballast tanks are of similar form.

The general characteristics and estimated performance of the airship are as follows:

Dimensions:

Volume.....	1,193,000 cu. ft.
Length.....	410 ft.
Width.....	82 ft.
Height.....	90 ft.

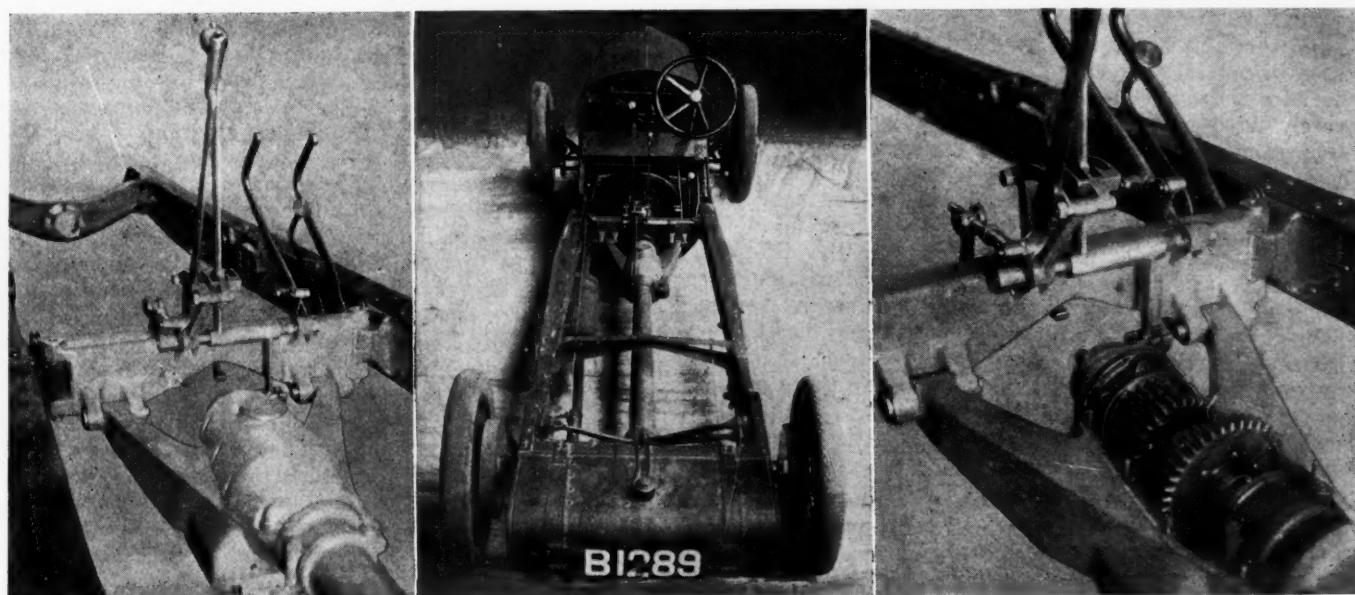
Weights:

Ship empty.....	33,600 lb.
Crew, ballast, fuel and other useful load.....	42,500 lb.
Total weight.....	76,100 lb.

Speed:

Estimated horizontal.....	80 m. p. h.
---------------------------	-------------

Belgian Excelsior Chassis



At the left—Control levers and pedals. Center—Four wheel brakes and axle stabilizer. At the right—Mounting of gearbox at front end of propeller shaft housing

The Most Suitable Steels for Automobile Parts

In this treatment of a very interesting subject, the several parts of vehicles are considered with a view to the best use of the steels standardized by the American and English Societies. Condensation of an article by Dr. W. H. Hatfield, read before the Institution of Automobile Engineers.

WHILE a set of specifications for automobile steels has been issued in this country by the Society of Automotive Engineers and in England by the Engineering Standards Committee, it is not specified for what parts of the automobile the different steels are most suitable. Of course to a certain extent the use of the different steels is limited, and these limitations are well known. For instance, for case-hardening only steels very low in carbon can be used, and for springs a high carbon steel is necessary. Yet the fact remains that for most of the structural and power transmitting parts of the car there is a considerable range of steels which may be used with a fair degree of satisfaction. Which of these different available steels is the best for given conditions of service is a problem which the engineer must generally solve for himself. Considerable light is thrown on this subject by a paper recently presented to the Institution of Automobile Engineers by Dr. W. H. Hatfield.

As regards the factor of safety to be allowed, Dr. Hatfield says that it is broadly realized that aero and automobile parts should be stressed within their elastic range, but, practically, such ideal design is really impossible for two reasons: First, the stresses which are likely to be put on the different parts of an automobile, for instance, cannot be quite quantitatively predicted, and, in the second place, the designer has not a sufficient knowledge of the elastic ranges of his material. It naturally follows that it is fully realized by the designer that a number of his parts will, in service, almost with certainty be stressed beyond their elastic limit, i.e., some of the parts need to possess a considerable capacity for plastic deformation or otherwise they will smash. The ideal material for such severely tried parts is obviously a material with a high elastic range accompanied by the maximum capacity for plastic deformation. Unfortunately, as the elastic range of a steel increases, its ductility decreases, and hence the automobile engineer has to balance in his own mind the relative importance of these two factors in the different parts which are under consideration. It is particularly important in those parts which are likely to receive severe shocks that they shall have this capacity for plastic deformation, particularly so when it is realized that the stresses which are developed under some of those conditions are such that no condition of any steel within the knowledge of the author would have an elastic range high enough to safely carry them.

Cylinders—Owing to the considerable diversity in design and principle, the specification of any particular material is rendered undesirable. One or two main lines may, however, be laid down. The author is prepared to state that aluminum alloys have a great future before them for this purpose, for several obvious reasons. There appears to be every reason to expect alloys of reasonably

high tensile strength to be produced, along with a high thermal conductivity. Against such desirable properties, however, it is well known that aluminum will not resist abrasion to the same extent as cast iron or steel. It will be clear, then, that if an aluminum cylinder is to be employed, it is desirable to use a steel or cast-iron liner. Where decision is made, from the standpoint of intensity of service, to employ steel cylinders, 40 to 50-ton steel would appear to be quite satisfactory, since it has a high elastic range in the neighborhood of 20 tons per sq. in., and hence, for automobiles, if such pressed steel cylinders are employed, the same strength will be obtained with less weight. For the most highly tried cylinders (aero engines) it is, perhaps, desirable to use—as has been done—the hardened and tempered 60-ton nickel chromium steel.

As regards slow moving vehicles, cast iron seems to fulfil requirements satisfactorily, but where the engineer has any doubt in this direction, he may usefully employ the 40-ton steel.

Crankshafts—The characteristics of the material for a successful crankshaft do not form a subject of much discussion. This is a case where it is agreed that a reasonably high elastic range is an advantage, and this characteristic, coupled with absolute reliability in the material, constitute the essentials. Three per cent nickel chromium steel is recommended for both the aero engine and for the racing and touring car, while a 3 per cent nickel steel is recommended for slow moving vehicles. As regards aero engines, where weight is a substantial consideration and where the stresses also are higher as a consequence, it is generally conceded that the 60-ton condition of this nickel chromium steel is most suitable. It may be considered that for a touring car it is unnecessary, and it may also be considered that the 3 per cent nickel for the slow speed vehicles is an unnecessarily good material for the purpose. The author would, however, point out that the second item which he postulated, namely, reliability, is, perhaps, the main factor to be considered, and as will be shown later in the paper, the conditions of manufacture, casting and subsequent treatment of the various steels are extremely important. From the automobile engineer's standpoint, a 50-ton carbon steel, from a strength point of view, will probably meet the case, but it should be borne in mind that carbon steels are produced in a much more wholesale fashion and with much less detailed technical control of manufacture than special steels in works where the production of the special steels is not being conducted side by side with them, and the author is of the opinion that until the technique in the production of the carbon steels has attained the same plane as in the case of the alloy steels, that fact alone will be a definite disability in the case of carbon steel. These observations, however, are general in their application, and will in some measure in-

dicating the attitude of mind adopted by the author to guide him in the selection of the various steels.

Connecting Rods—Here again under types A and B 60-ton nickel chromium steel is recommended, while for category C, slow moving vehicles, a 40-ton steel is suggested. At the same time, it should be borne in mind that where lightness is required and consequent high stressing is likely to result, 100-ton air hardening nickel chromium steel has been very successfully employed. The latter material, in the author's opinion, lends itself well for this purpose, but it is, of course, realized that there are difficulties with both these nickel chromium steels as regards producing the drop forging. Where economies of production are concerned and an exactness in dimension of the drop forging is required, a 40 or 50-ton carbon steel is capable of giving good results, and when suitably designed parts are being manufactured it will no doubt fill the bill, as shown by much practice.

Front and Rear Axles—Here we have, particularly in the case of the rear axle, a part which is subjected to the roughest usage. A reasonably high elastic range must not be pushed too high at the expense of ductility. The author has had the opportunity of examining many experimental rear axles, and as a result of practical experiments, in which mild carbon steel, 40 to 50-ton carbon steel, 3 per cent nickel and 60-ton nickel chromium steel have been employed, he has arrived at the very definite opinion that the 45 to 50-ton condition of the 3 per cent nickel steel, in its hardened and tempered condition, is the material which is best for this purpose.

Chassis Frame, Etc.—The chassis frame, along with its auxiliary parts such as tie rods, etc., has to withstand stresses of a racking nature, which require toughness in a material as the essential feature. (The frame is built up of angular or channel sections produced by pressing steel sheet, most suitable for the purpose.) Tie rods and sundry parts have in the past been made of various kinds of steel, not excluding cold-worked dead mild steel. This is considered undesirable, and an appreciable advantage will accrue from the adoption of 45 to 55-ton 3 per cent nickel steel.

Keys—As an instance of the difficulty of making an arbitrary decision, we cannot select a better item than keys. The author has discussed this matter with several well known gentlemen whose opinion would undoubtedly carry weight, and the lack of unanimity of opinion is remarkable. However, all seem to be agreed that the qualities required are great strength to resist shear stresses, accompanied by a moderate amount of ductility. A material which, from the simplicity of its heat-treatment and its mechanical properties would seem best to fit in with these requirements is the 0.90 per cent carbon steel, which is much used by engineers.

Gears—The author has become more and more convinced, by experience with air hardened gears, that they are superior to the case-hardened ones. The air hardened steel gives hardness with toughness, and several further advantages as regards maintenance of dimensions in manufacture. Wherever a process such as case-hardening is introduced, several variables which affect the product are also introduced, and unless final dimensions are going to be produced by grinding, accuracy is vitiated. This, however, is only a personal opinion, and the author is acquainted with several engineers of considerable reputation who hold the opposite view. Everything depends on the standard of technique in carburizing, and in the subsequent heating and quenching operation.

Properties of the Selected Steels—The following steels, selected from the British Engineering Standards Asso-

ciation's Specification for Wrought Automobile Steels, were considered to be capable of supplying, with few exceptions, the wants of the automobile and aero constructor:

- (1) 40-ton Carbon Steel
- (2) 0.10 per cent Carbon Case-hardening Steel.
- (3) 5 per cent Nickel Case-hardening Steel.
- (4) Nickel Chromium air hardening Steel.
- (5) 3 per cent Nickel Steel.
- (6) 3 per cent Nickel Chromium Steel.

The author would also consider three or four more steels as being of sufficient importance to the industry to merit careful consideration along with the six mentioned above. These steels are:

- (7) Chromium Vanadium Steel for general purposes.
- (8) Spring Steels (which will be dealt with under a separate heading).
- (9) 12/14 per cent Chromium Steel.
- (10) 0.9 per cent Carbon Steel.

In Table I will be found the analyses, condition and mechanical tests of five carbon steels which, in effect, cover the range of this class of material of interest to automotive engineers. A very mild steel, 0.15 per cent carbon, is given for comparison purposes with the 30, 40 and 50-ton steels, while a 0.9-1.0 per cent carbon steel has been included, since this steel has proved successful in certain designs in keys, clutch plates and as piston pins. The 40-ton steel is the carbon steel which is of the widest real interest to automobile engineers.

TABLE I.

	0.15 per cent carbon.	30-ton carbon.	40-ton carbon.	50-ton carbon.	0.9-1.0 per cent carbon.
Carbon, per cent.	0.15	0.31	0.45	0.60	0.90
Manganese, per cent.	0.30	0.67	0.70	0.69	0.55
Silicon, per cent.	0.06	0.14	0.15	0.20	0.11
Sulphur, per cent.	0.034	0.048	0.048	0.04	0.036
Phosphorus, per cent.	0.018	0.044	0.036	0.039	0.031
Chromium, per cent.	Nil.	Nil.	Nil.	Nil.	Nil.
Nickel, per cent.	Nil.	Nil.	Nil.	Nil.	Nil.
Condition.	Normalised, 900° C.	Normalised, 850° C.	Normalised, 820° C.	Normalised, 810° C.	Normalised, 850° C.
Elastic Limit, tons per sq. in.	14.0	20.05	21.5	27.0	23.16
Yield Point, tons per sq. in.	14.0	20.70	22.9	29.16	32.4
Maximum Stress, tons per sq. in.	21.4	35.17	41.2	48.60	59.4
Elongation, per cent.	45.0	30.5	25.0	22.0	11.0
Red. of Area, per cent.	73.56	54.6	47.0	37.9	15.5
Yield,	7.63	14.1	15.6	16.6	18.8
Probable Max. Stress.	20.95	27.51	29.0	33.3	35.7
Degrees Twist.	1070	548	434	320	184
Izod, ft.-lb.	81	33	28	8	2
Arnold, reversals.	456	444	500	480	352
Stanton, Blows.	1016	1413	1244	1139	264
Sankey, ft.-lb.	2300	1700	3974	2496	1112
Brinell No.	95	156	170	223	286
Shore No.	21	27	29	35	40

Looking at the figures in Table I broadly, it is clear that the 40-ton steel with a maximum stress of 40/45 tons per sq. in. possesses an elastic limit of approximately 20 tons, and a considerable elongation and reduction of area, sufficiently so to permit of its being utilized in many parts, even where plastic deformation for the accommodation of initial and even subsequent stresses makes a considerable percentage of ductility desirable. It will be noted that in the torsion test this steel gives an excellent twist, which fact will, the author considers, be immediately convincing to the engineering mind. The notched bar impact value is indifferent, but so it is in many aero and automobile parts, and a high impact value is not a point upon which the author proposes to insist.

The 0.9-1.0 per cent carbon steel is of interest in so far as this steel has proved itself to be capable of giving good

service as regards resistance to abrasion.

In Table II will be found stated the analyses, treatment and mechanical properties of the case-hardening steels selected, and also for comparison purposes the details of the air hardening nickel chromium steel.

Air hardening nickel chromium steel is given in the 100-ton condition, which is the condition in which the gears, etc., are put to service, and also in the 60-ton condition, because this steel can replace the 3 per cent nickel chromium steel.

TABLE II.

	0.10 per cent Case-Hardening Carbon	5 per cent Nickel Case-Hardening	Air Hardening Ni. Cr. 60-ton. 100-ton.
Carbon, per cent.	0.11	0.14	0.30
Manganese, per cent.	0.73	0.29	0.40
Silicon, per cent.	0.10	0.16	0.105
Sulphur, per cent.	0.018	0.018	0.027
Phosphorus, per cent.	0.02	0.009	0.033
Chromium, per cent.	Nil.	Nil.	1.38
Nickel, per cent.	0.12	4.84	4.07

Condition	Normalised, 900° C. Water quenched, 760° C.	Normalised, 860° C. Water quenched, from 760° C.	Oil quenched, 830° C. Tempered, 620° C.	Air hardened, 820° C.
Elastic Limit, tons per sq. in.	12.0	41.9	30.08	90.5
Yield Point, tons per sq. in.	17.0	60.58	46.92	109.6
Maximum Stress, tons per sq. in.	30.1	17.5	59.95	9.0
Elongation, per cent.	33.0	46.9	21.0	21.0
Red. of Area, per cent.	63.3	21.23	53.8	55.8
Yield	9.9	41.85	32.8	67.26
Probable Maximum Stress	25.9	256	39.2	67
Degrees Twist	1028	23	399	15
Izod, ft.-lb.	90	190	45	146
Arnold, reversals.	355	10112	205	4380
Stanton, blows	1236	1443	7188	573
Sankey, ft.-lb.	1720	269	3102	477
Brinell No.	146	43	269	69
Shore No.	25		44	

TABLE III.

	3 per cent Ni. Steel.	3 per cent Ni. Cr. Steel.	Chromium Vanadium Steel.	12-14 per cent Cr. Steel. 50-ton. 100-ton.
Carbon, per cent.	0.39	0.32	0.46	0.28
Manganese, per cent.	0.55	0.60	0.64	0.22
Silicon, per cent.	0.110	0.12	0.19	0.102
Sulphur, per cent.	0.039	0.03	0.028	0.03
Phosphorus, per cent.	0.031	0.03	0.031	0.026
Chromium, per cent.	Nil.	0.76	1.48	12.58
Nickel, per cent.	2.96	3.41	0.19	0.20
Vanadium, per cent.	0.33

Condition	Oil quenched 850° C. Water quenched, 620° C.	Oil quenched, 850° C. Water quenched, 600° C.	Oil quenched, 850° C. Air cooled, 650° C.	Oil quenched, 950° C. Water quenched, 650° C.	Oil quenched, 950° C. Tempered, 250° C.
Elastic Limit, tons per sq. in.	30.8	47.0	38.6	30.0	95.0
Yield Point, tons per sq. in.	41.7	56.0	48.6	39.8	106.7
Maximum Stress, tons per sq. in.	49.51	62.0	56.5	49.02	7.0
Elongation, per cent.	24.0	21.0	22.0	22.0	29.5
Red. of Area, per cent.	63.6	62.0	60.4	55.0	50.3
Yield	28.5	37.2	36.8	26.07	57.4
Probable Maximum Stress	34.5	39.6	39.0	32.9	69
Degrees Twist	468	440	532	478	8
Izod, ft.-lb.	72	240	35	168	152
Arnold, reversals.	250	7700	280	4281	1651
Stanton, blows	4609	3000	6264	1440	1240
Sankey, ft.-lb.	3100	277	4360	217	444
Brinell No.	223	45	255	35	64
Shore No.	35		41		

It will be noticed that a chromium vanadium steel, with full details, is included in the table, and the reason for its inclusion is simply the fact that the experience of automobile engineers had led to its extended use. It will be seen that the steel in the condition dealt with has properties which are intermediate between the 3 per cent nickel and the nickel chromium steel. This steel will be dealt with later in detail.

As the 12/14 per cent chromium steel is coming more into use since the termination of the war, it was thought useful to give full details both as regards the 100-ton condition and also the 50-ton condition.

40-Ton Steel—This steel is preferably an acid Siemens steel containing about 0.45 per cent carbon. The manganese content, which has quite an important influence upon the mechanical properties, should be in the neighborhood of 0.6 to 0.8 per cent. The steel should not be put to work in the forged condition, but should be normalized by heating to a temperature of 850 deg. C., soaking through at that temperature and allowing it to cool in air away from draughts. This steel machines very well, and, considered generally, should receive far more attention from the industry than apparently it has done in the past.

0.9-1.0 Per Cent Carbon Steel—This steel is included owing to its peculiar adaptability for clutch plates, keys, etc., and, as has been stated before, is favored in some directions for piston pins. This steel is one well worth careful study, but its importance at the moment lies in the fact that it consists entirely of pearlite.

Case-Hardening Steels—In the author's opinion case-hardening of steels will always have considerable importance in aero and automobile engineering, owing to the fact that in numerous instances local and surface hardness is required, combined with the essential toughness in the part as a whole. These steels are particularly interesting owing to the fact that there is little difficulty in inducing into the part as a whole mechanical properties which are comparable to those of the high-tensile steels. It should always be borne in mind, as shown in Table II., in connection with the carbon case-hardening steels, that the ultimate mechanical properties of the part depend to some extent upon the accuracy of the last heating and quenching operation.

The 0.10 per cent carbon case-hardening steel, and the 5 per cent nickel case-hardening steel have been selected to the exclusion of others, since it is felt that if there is any need to improve on the mechanical strength obtained in the case of the 0.10 per cent carbon case-hardening steel, the best thing to do is to immediately proceed to the 5 per cent nickel steel.

Commenting upon the comparative properties of the carbon case-hardening steel as against the 5 per cent nickel steel, the essential difference is that the mechanical strength of the core of the nickel steel is very much greater than that of the carbon steel, although the actual hardness of the hard surface produced on the carbon case-hardening steel is a little greater than the hardness of the hard surface produced by carburizing on the 5 per cent nickel steel.

Air Hardening Nickel Chromium Steel—This steel, as will be noticed later, is introduced largely for gears, although it is considered that the mechanical properties of the material are such that time and a more complete understanding of the steel will lead to its more extended adoption for many other parts. Essentially the steel consists of an 0.30 per cent carbon steel to which has been added just over 4 per cent of nickel and about 1½ per cent of chromium. This proportion of nickel and chromium has the influence of so increasing the "viscosity" of the carbon change-point that cooling in air of such articles as gears leaves the material with a Brinell number up toward 500. The final treatment consists of heating uniformly to a temperature of 810 deg. to 820 deg. C. followed by cooling in air away from draughts. Unless the heating is perfectly uniform, and the cooling is conducted in such a way that the part cools fairly equally, distortion is liable to result. After the air hardening

operation, it is advantageous to re-heat to temperatures of 200 deg. to 250 deg. C., which treatment has the advantage of eliminating any stresses left in by the air hardening treatment.

Three Per Cent Nickel Steel—This steel requires little comment. The author would, however, observe that it should be hardened and tempered if the best mechanical properties are to be obtained. If hardened and tempered the result is a high tensile steel with maximum ductility.

Three Per Cent Nickel Chromium Steel—This steel is in effect the 3 per cent nickel steel to which has been added 0.5-1.0 per cent of chromium. The addition of this chromium produces a steel which hardens more effectively, and this, of course, means that parts of thicker section are most usefully made in it, since hardness through the mass is more easily obtained than in the absence of chromium. It should be here mentioned that nickel chromium steel is much more susceptible to overheating in the forging operations than carbon steels of similar carbon contents. With reasonable care, however, this aspect of matters presents no difficulty.

Chromium Vanadium Steel—In Table III will be found the analyses, conditions and tests of a chromium vanadium steel. There has been much discussion on the merits of chromium vanadium steels, but the author is quite satisfied that the chromium vanadium steels and some of the chromium steels are well worthy of careful attention from the industry. For back axles, propeller shafts, transmission shafting, etc., chromium vanadium steels, as typified in the example given in Table III, have given extremely satisfactory service. In the chromium vanadium steel higher mechanical properties are obtained without having recourse to a steel of marked air hardening characteristics.

Twelve to Fourteen Per Cent Chromium Steel—The "stainless" and non-rusting properties of this steel, coupled with its high mechanical properties, lead the author to suppose that its use in the aero and automobile industries will only be limited by economic considerations. There are undoubtedly many parts for which it is admirably suited. The essential thing to remember is that the steel must be hardened and tempered if its available properties are to be obtained, and in this connection a very important fact must be kept in mind, that the presence of the high percentage of chromium results in the carbon change-point occurring at about 820 deg. C.

Valves—The valve problem is the one which, perhaps, gives the greatest scope to the metallurgist. The steel employed must have good mechanical properties, but, further, must sufficiently maintain its strength at high temperatures. Exhaust valves have to withstand temperatures from 200 deg. C. up to well above the critical point, while inlet valves have also to stand considerable temperatures, in some cases high enough to seriously weaken many steels. The steels which best resist a diminution of strength with increase in temperature are high tungsten steels and high chromium steels.

Springs—In discussing springs, we have two essential types to consider: (1) valve springs; (2) bearing springs. The author has a considerable amount of experience in the particular field, and has no hesitation in recommending chromium vanadium steel for valve springs. Actual stringent service conditions have shown that this material, in a suitably hardened and tempered condition, gives excellent service.

For bearing springs there are two steels which adequately meet the case, namely, chromium vanadium steel and silico-manganese steel. What is wanted in a spring is a very high elastic range accompanied by a freedom

from intrinsic brittleness. In Table IV are given the results of mechanical tests on chromium vanadium spring steel, which will give an accurate indication of those mechanical properties which have proved the most satisfactory.

TABLE IV.

Chromium Vanadium Spring Steel

Yield Point, tons per sq. in.....	89.5
Maximum Stress, tons per sq. in.....	107.3
Elongation, per cent.....	8.5
Red. of Area, per cent.....	24.2
Izod, ft.-lb.	14.
Charpy, ft.-lb.	6
Arnold, reversals	145
Stanton, blows	9.940
Brinell Hardness No.....	444
Shore Hardness No.....	63

There are three factors which play a vital part in the success or otherwise of a bearing spring, and they may be enumerated as follows: (1) design; (2) the heat-treatment of the steel, and (3) other manufacturing details. Lubrication might also be included as a factor which requires much more attention than it has had in the past. The author is, however, only concerned here with the second item, heat-treatment. It will probably interest engineers to have a statement as to why the alloy steels give a better performance than carbon steels. As the main thing that is required is a high elastic range free from brittleness, it follows that after hardening the spring shall be tempered in such a way that the tempering operation removes the extreme hardness and internal stresses set up by quenching, and at the same time gives to the steel the required hardness. In carbon steels there is a danger of over-tempering resulting in a restricted elastic range, which is sure to result in permanent set in the springs. On the other hand, with alloy steels the hardened steel resists tempering to a greater extent, and, therefore, the difficulty mentioned in the last sentence is largely eliminated.

Silico-manganese steel responds much more satisfactorily than carbon steel, as shown in the mechanical tests in Table V.

TABLE V.

	Silico-manganese		Carbon	
Carbon, per cent.....	0.49		0.96	
Manganese, per cent.....	1.14		0.26	
Silicon, per cent.....	1.80		0.19	
	—Oil quenched— 875° C. Tempered 450° C.		—Water quenched— 875° C. Tempered 450° C.	
	Car- bon.	Silico- manganese.	Car- bon.	Silico- manganese.
Yield Point, tons per sq. in.	75.4	86.9	67.4	84.8
Max. Stress, tons per sq. in.	89.3	92.2	89.8	89.8
Elongation, per cent... ..	7.5	12.5	9.0	13.0
Red. of Area, per cent.. ..	20.1	37.1	23.0	34.6
Izod, ft.-lb.	12	14	11	13
Stanton, Blows.....		7320	610	7138
Brinell Hardness No....	402	418	402	418

It is clear from these figures that with the same hardness, the silico-manganese is a much tougher steel.

AMONG the numerous books treating of some phase of American war activities which are now appearing is "Wings of War," by Theodore MacFarlane Knapen. Its content is well described by the sub-title which labels it "An Account of the Important Contributions of the United States to Aircraft Inventions, Engineering, Development and Production During the World War." The book is written in an interesting manner. It is published by G. P. Putnam's Sons and contains an introduction by Rear-Admiral D. W. Taylor.

Specific Heat and Dissociation in Internal Combustion Engines

This abstract of a paper read before the British Association for the Advancement of Science by H. T. Tizard and D. R. Pye has a direct and timely interest in connection with research work that has been going forward within the automotive industry in this country.

A METHOD for calculating thermal efficiency from a knowledge of specific heats was worked out very completely by the late Professor Hopkinson in his paper on the "Thermal Efficiency of Gas Engines," but all work on these lines has suffered under two great disadvantages:

(1) The specific heats of the gases concerned were not known at all accurately about 1500 deg. C.; (2) the dissociation of CO_2 and H_2O in the cylinder was unknown, and no attempt has been made to separate the two effects of specific heat and of dissociation.

As to the first point, there is ample evidence to show that the maximum temperature reached in a gasoline engine is of the order of 2500 deg. C. As to the second point, the Committee on Gaseous Explosions pointed out rightly that it was the "apparent" specific heat that was of primary importance for the theory of engine efficiency, and this included any effects of dissociation. But the dissociation of CO_2 and H_2O is accompanied by an increase in the number of molecules, and therefore its extent depends considerably upon the pressure as well as the temperature. Further, since they have one dissociation product in common, namely, oxygen, dissociation in a mixture of the two is not the same as when they are separate; the extent of the dissociation of each will in fact depend on the ratio of the amounts present, and the "apparent" specific heat of a mixture may be very different to the sum of the "apparent" specific heats of each measured separately. The only possible way to attack the problem is to find the true specific heats, and to measure the dissociation under definite conditions, from which it is possible to obtain sufficient data to calculate equilibrium conditions in any mixture.

Sufficient data already exist for this purpose. A number of experiments, both in the dissociation of CO_2 and H_2O , and on the true specific heats of gases at high temperatures have been carried out in Nernst's laboratory in Berlin, with the primary object of testing recent developments in chemical thermodynamics. The following tables give the results of most importance for our purpose.

TABLE I.—Mean volumetric heats between 100 deg. and 3000 deg. C. in gram-calories per gram-molecule

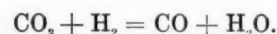
100 Deg. C. up to	Deg. 500	Deg. 1,000	Deg. 1,500	Deg. 2,000	Deg. 2,500	Deg. 3,000
	C.	C.	C.	C.	C.	C.
Nitrogen	5.17	5.28	5.50	5.75	6.00	6.30
Water vapour	6.25	6.94	7.64	8.42	9.71	11.2
Carbon dioxide	8.25	9.55	10.07	10.50	10.87	10.95

It is assumed in the first place that the only molecular species present after an explosion and during the expansion are CO_2 , H_2O , CO , H_2 , O_2 , N_2 , and, at the high temperatures reached, the reaction velocity is such that chemical equilibrium is always maintained throughout the working stroke. There is considerable evidence in favor of the

TABLE II.—Dissociation of CO_2 and H_2O at different temperatures and pressures (expressed in percentages)

		CO_2			
		Pressure			
Temperature		0.1 Atm.	1.0 Atm.	10 Atm.	100 Atm.
1,500 deg. C.		0.1	0.05	0.022	0.01
2,000 deg. C.		4.35	2.05	0.96	0.45
2,500 deg. C.		33.5	17.6	8.63	4.1
3,000 deg. C.		77.0	55.0	32.0	17.0
		H_2O			
Temperature		0.1 Atm.	1 Atm.	10 Atm.	100 Atm.
1,500 deg. C.		0.04	0.02	0.01	0.004
2,000 deg. C.		1.25	0.58	0.27	0.125
2,500 deg. C.		8.8	4.2	2.0	0.93
3,000 deg. C.		28.4	14.4	7.1	3.3

substantial accuracy of this assumption; if true, and if the gas laws held at those high temperatures, which is also extremely probable, the pressure and temperature when the explosion takes place, and at any point during the expansion, may be calculated from the chemical equation representing the combustion and from the dissociation constants of CO_2 and H_2O , deduced from the figures given above. Taking the case of mixtures of pure benzene with air, the shape of the power curve is first investigated on the assumption that dissociation takes place. The composition of the gases after exploding a rich mixture can be calculated from a knowledge of the "water gas" reaction,



It is shown that the power curve should show a sharp maximum when benzene is present in the correct proportion for complete combustion to CO_2 and H_2O , and should fall off steadily for both weaker and rich mixtures. This is contrary to observations, which in itself is evidence of "dissociation." When dissociation is taken into account it is shown that the power should remain constant to within about 1 per cent for mixtures ranging from the correct mixture to about 30 per cent rich mixtures. This is entirely confirmed by experiment. It was further predicted that the same curve of an engine running on a kerosene mixture should fall off more sharply with the richness of mixture than if benzene were used.

Maximum thermal efficiencies in practice are obtained with mixtures so weak that any further weakening results in misfiring. Experiments by Watson and others have shown that this occurs when the amount of fuel present is only about 80 per cent of that required for complete combustion of the air. It is shown that if the compression ratio be five to one, the theoretical efficiency, if there is no heat loss, should be 38 per cent of the heat of the fuel. Indicated thermal efficiencies as high as 70 per cent of the "air cycle efficiency" (= 33 per cent) are said to have been obtained in engines working at this compression ratio. The highest thermal efficiency under these conditions that the authors have been able to obtain

is 32 per cent of the heat of the fuel. The difference between the calculated and observed values corresponds to a loss of heat during the working stroke of about 13 per cent of the heat of the fuel. Since the total loss of heat to the cylinder jackets was found to be about 25 per cent, the correspondence between calculated and observed values must be considered very satisfactory. It is interesting to note that with weak mixtures the theoretical efficiency is about the same whether the gases are assumed to be dissociated or not. The effect of dissociation (which is about 20 per cent of the CO_2 present at the maximum temperature) is to lower the maximum temperature, without affecting appreciably the work done on expansion.

The maximum temperature calculated for a benzene-air mixture is 2700 deg. C. (initial temperature of charge = 100 deg. C.). The increase in molecular volume in such a case is about $6\frac{1}{2}$ per cent, and the maximum pressure, assuming a volumetric efficiency of 80 per cent, should, therefore, be

$$5 \times 0.8 \times 1.065 \times \frac{2973}{373} = 34 \text{ atmospheres} \\ = 510 \text{ lb. per sq. in.}$$

If the loss of heat before the attainment of maximum pressure is 10 per cent, the maximum pressure would be about 460 lb. per sq. in., which corresponds closely to the maximum pressures observed in practice, but the calculation is only approximate, and assumes an instantaneous rise in pressure. The maximum temperatures for a kerosene-gasoline-air mixture are considerably lower.

The theoretical efficiency at different compression ratios has also been examined. It is found that for a "correct" mixture, which in practice is about the weakest mixture giving maximum power, this efficiency can be expressed empirically by the expression

$$1 - \left(\frac{1}{r}\right)^{0.255}$$

and that the maximum efficiency (20 per cent weak mixture) can be expressed by the formula

$$1 - \left(\frac{1}{r}\right)^{0.3}$$

where r = the compression ratio. The latter gives a real standard of comparison by which actual performance can be judged. It assumes no loss of heat, during the working stroke, but takes fully into account the nature of the working fluid. It is interesting to note that the investigation led to the conclusion that the rise in efficiency with increase in compression ratio should be much greater in proportion than that predicted from the air cycle formula.

Experiments undertaken with Mr. Ricardo's engine, using benzene as fuel, fully bore this out. The following table gives some of the results:

Compression Ratio	Air Cycle Efficiency	Observed Efficiency	Ratio
4 to 1	0.425	0.275	0.65
5 to 1	0.475	0.316	0.665
7 to 1	0.540	0.372	0.685

The rise in efficiency at maximum power would appear to be still greater in proportion, but no experiments have yet been made to test this, and indeed it would be difficult to obtain accurate figures.

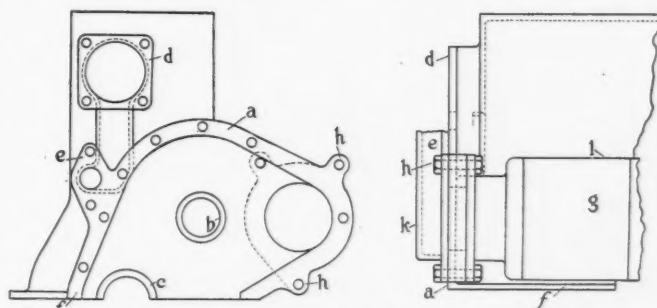
As regards maximum power with different fuels, it is shown that when all factors are taken into account, the maximum power with perfect distribution should be the same within 1 per cent for any kind of hydrocarbon fuel, if the initial charge temperature (or volumetric efficiency) and the compression ratio are constant. The maximum power with alcohol should be slightly lower, but as the latent heat of alcohol is high, the charge temperature in practice is lower, and the maximum power reached is the same, or slightly higher, than that reached with hydrocarbon fuels. These conclusions have also been confirmed by experiment.

Finally, no other gases besides N_2 , O_2 , H_2 , CO , CO_2 , H_2O , can exist in appreciable quantities in equilibrium during the explosion and expansion stroke. Methane can be formed during the exhaust stroke, and also aldehydes if the mixture is rich. The ratio of carbon monoxide to hydrogen in the exhaust gases under different conditions can be calculated. If a kerosene is used, the ratio H_2/CO is calculated as 0.4, whereas Bannatyne's empirical rule gives 0.36. With aromatic fuels this ratio would be very different.

Designing Engines for Easy Production

THAT American methods are finding favor in the British automobile industry is shown by a patent recently issued to Crossley Motors, Ltd., of Manchester, England, and R. H. Rose. Crossley Motors, it may be pointed out in this connection, is now intimately connected with one of the leading American automobile manufacturing concerns. The invention relates to an engine having all of the cylinders and the top half of the crankcase cast integral, and involves the feature that all the machined faces on the front of the engine are all in the same plane, so that they can be machined at one side of the planing or other machine. *a* is the timing gear face; *b* the camshaft end bearing face; *c* the upper part of the crankshaft end bearing face; *d* the water pump and fan face; *e* the water inlet flange face and *f* the face to receive and fit against the bottom half of the crankcase. When in position the bottom half of the crankcase is secured to the face *f*, and has its end machined level with the faces *a*, *b*, *c*, *d*, *e*, which are all in the one and same plane. The accessory shaft, the center of which is indi-

cated at *g*, is surrounded by bolts *h* employed to hold in position the accessory *l* and the timing gear cover *k*. Each bolt *h* passes through the cover *k*, the crankcase and accessory *l* and draws the latter up against a face prepared to receive it on the near side of the crankcase, and thus great rigidity is insured.



Front end of engine block designed for machining in surface miller

Automobile Switches Designed for Rapid Construction

These switches are constructed of spun or stamped steel parts with impregnated paper insulating members. The method of fastening together is very simple. Rivets are employed in most cases and where not practicable, lips extending from the metal portions are used.

A LINE of electrical control apparatus for automobiles that employs extremely simple methods of construction and is adaptable to various types of electrical systems is manufactured by the Briggs & Stratton Co. Stampings and die castings are used extensively, and very simple means of fastening together are employed. Either hollow head rivets or bent over metal lips are used where practicable. All screws used as binding posts are fitted with lock washers. Wherever a metal part appears that is neither plated nor coated with an enamel it is rust-proofed by the company's own process.

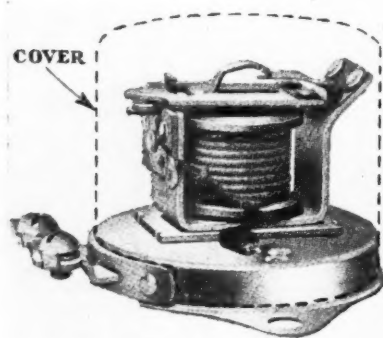
The insulating material is impregnated paper board. This material lends itself very readily to this use, and any lettering in the way of labels for binding posts and so forth is very easily impressed in it. In some cases this material is used to form part of the structure as well.

The most interesting member of the line is a universal switch for both lighting and ignition. It is so constructed that either battery or magneto ignition may be employed. A movable piece on the back is turned

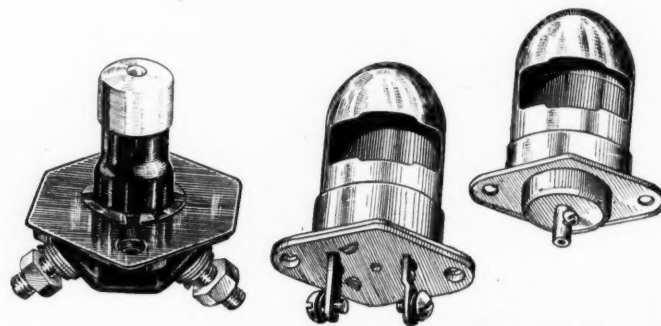
and connected into a different hole, depending on the system desired. The ignition is controlled by a key inserted in the center of the diecast handle. The handle controls the lighting circuits and, by shifting the connections, may be employed for either the two bulb headlight or resistance dimming systems. One of two types of keys is furnished. One is a simple push lock key with no changes and the other is a 25 change tumbler lock key.

Another model of switch does not have the choice of ignition systems, but retains the variety of lighting combinations. The handle is diecast but has no arm. Both of these switches are furnished with two forms of face plates. One with the screw heads visible and the other with a plated rim and the heads of the bolts hidden from view.

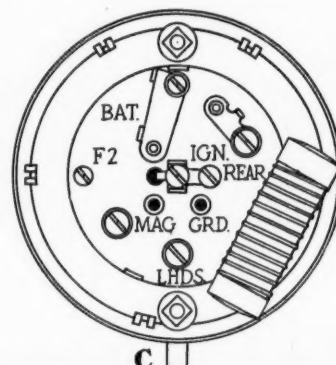
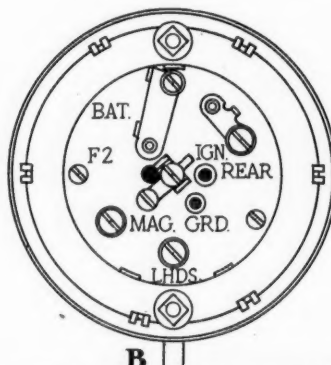
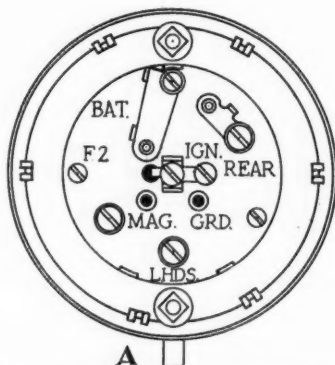
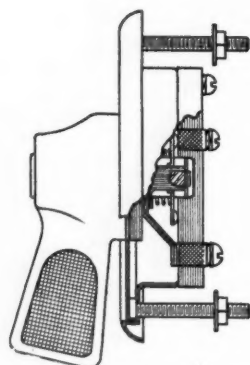
A separate line of switches is manufactured for trucks and airplanes. In the case of the airplane the metal parts are made of aluminum to reduce the weight. These switches are lacking in the elegant finish of the passenger car equipment and are designed to operate on either battery or magneto ignition. The dual magneto system



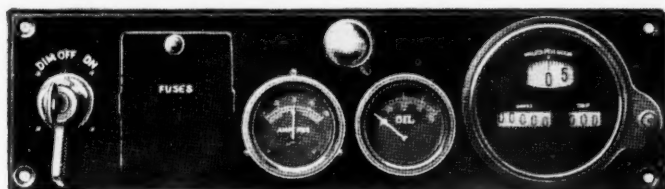
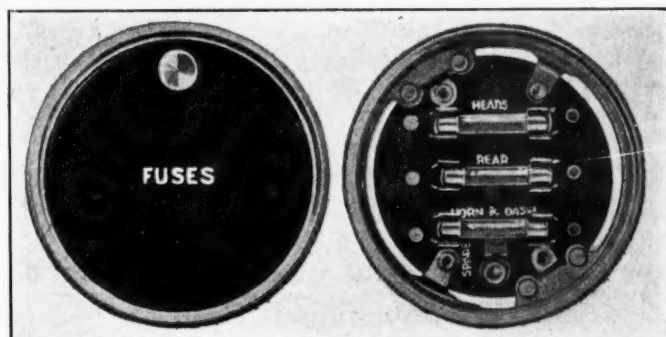
One type of cut-out with the cover removed, showing internal construction



To the left, a Remy starting switch and to the right, two types of dashboard lights with different sockets

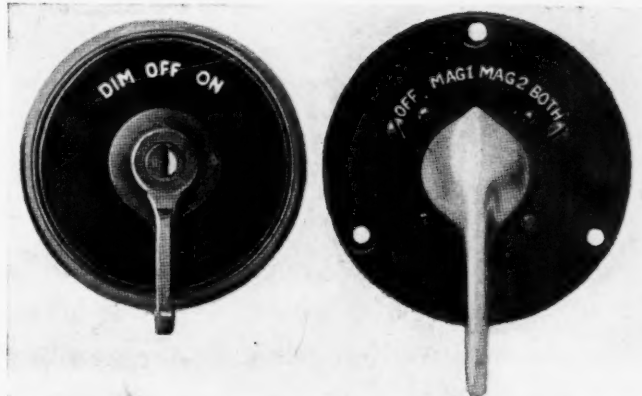


Part sectional and rear views of combination lock switch. A, switch set for battery ignition; B, for magneto ignition; C, switch with dimmer coil



is taken care of by a four-position switch. Any desired combination can be made up by employing the standardized type of construction.

This company also makes dashboard plates to carry their switches where desired. Included in some of the combinations is a very neat fusebox. This is intended to be covered by a plate similar in appearance to the



Upper left—A dashboard fusebox. Lower left—Typical instrument layout. Above—Two types of switches; the one at left also shown in section

supporting plate and allowing the fuses to be reached from the front of the instrument board.

Other units of automotive electrical systems are manufactured by the same methods. Among these is a line of reverse current cutouts designed for replacements. The same compactness of design and simplicity of construction is shown by them as is evident in the switches. Another unit made is the starting switch. This is very compact and the method of assembling by bent over lips of metal renders it nearly fool-proof.

Raybestos Trailer Brake Equalizer

BRAKES on trailers are very desirable, but the problem of designing such brakes is a very difficult one, for if the brakes are to be effective under all conditions they must not be affected by a change in the relative angular position of truck and trailer, as in turning corners, nor by a variation in the load on the trailer. The problem, of course, is not so much one of brakes as of brake operating mechanism or linkage. An equalizer which makes it possible to positively operate trailer brakes mechanically from the truck has been developed by the Raybestos Company. This equalizer, when only a single trailer is to be used, may be mounted at the rear end of the truck, but generally it will be mounted on the front end of the trailer, and it is so shown in the illustration.

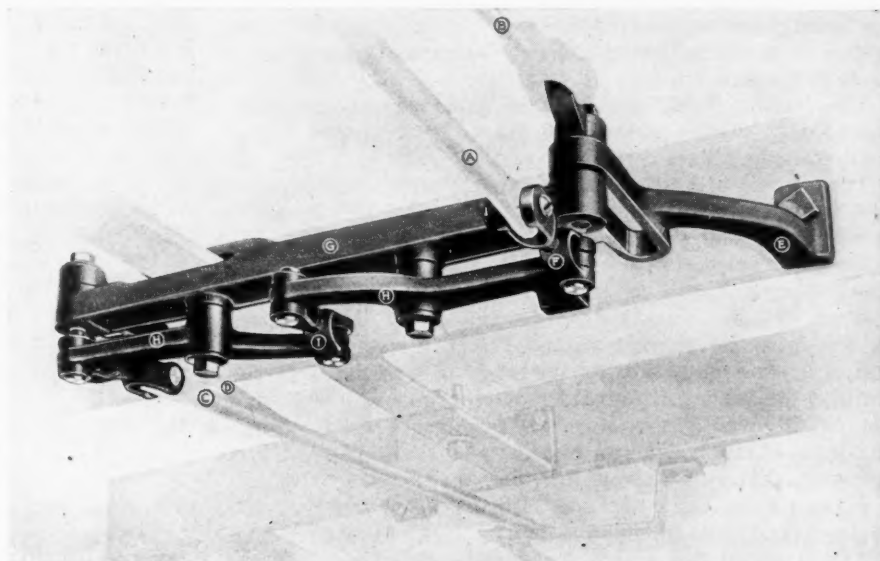
Referring to the cut, in the supporting bracket E is a horizontal slot or guide in which a stud in the end of the equalizer bar G works back and forth. Sufficient room for play is allowed in this slot so that the truck or trailer may pass around any curve and still leave the trailer brake under perfect control of the truck driver.

A distance rod B holds the stud in the equalizer bar G, always at the same distance from the trailer axle. It may change angle but not distance. The other end of the equalizer bar G is held by another rod D, and here again allowance is made for change of angle, but the distance from the truck remains fixed.

On top of the equalizer bar are two

bell crank levers H, H, connected by a clevis I. The outer end of one lever connects by clevis with the truck brake pull rod C. The outer end of the other lever is connected with the trailer brake pull rod A. When the brake on the truck is operated the pull rod, working through these levers, operates the brake on the trailer.

A SECOND edition, enlarged and revised, of its foreign trade manual, "Trading with the Far East," has just been published by the Irving National Bank of New York. The new edition embraces many subjects that enter into our business relations with the Far East.



Brake equalizer in position on trailer

Advertising the Industry When It Needs the Ad

Everybody knows the story of the pacific stranger who went to the rescue of a woman who was being beaten by her husband, and in turn was well chastised by the man and the woman, the latter immediately joining with her brutal helpmeet to repel the stranger.

By Clyde Jennings

THERE are two primary fundamentals of advertising that cannot be overlooked if the advertiser is to profit by his effort and expenditure. These are:

- (1) To lessen the cost of sales.
- (2) To increase sales.

The order in which these two points are given are intentional. To some they may appear to be inverted, but a little study on this point will convince any student of advertising that they are correctly placed so we will pass that point as obvious, for the intention of this article is not to boost advertising. The point we want to make here will require a bit of explaining, so we will turn to that phase right now.

A CRISIS always brings out the best or worst that is in the man. As this is being written, a world's series of baseball games is under way and the fans of the entire country are watching the error columns anxiously to see whether this youngster or that youngster in the two teams will "crack." The managers of the teams recognize the importance of a series by sending their veterans into the first games, even though a youngster may look better on paper. The reason is just this:

They want the youngsters to at least get the experience of watching one or more games on the bench for confidence before facing the opposing team and the crowd in a game that means so much to the player in cash and fame.

The feeling is universal. Men everywhere have sung the praises of the young ball player who played better than ever in a big series.

The automobile advertising men of this country have just passed through a crisis that is similar to the world series. **Are you singing their praises?**

There is another illustration that serves the point we want to make.

Obregon, the Irish-Indian president of the Mexican republic, is the newest ruler of an important country and of course many stories are being told of him. In the main, these stories illustrate how Obregon won and held the confidence of the Mexican public. This Irishman is a man of much wit and bravery, we are led to believe. Anyway, this story about him fits here:

At one time Villa captured Obregon and ordered the death squad out to make away with his chief enemy. Obregon asked for a last word with Villa and said to him:

"What would you shoot me for? If you shoot me, you will only split the Carranza party and make a present of the country to the foreigners. If we hold together, we can hate each other, but we can keep Mexico for the Mexicans."

Villa saw the point and the death squad shot only an unnamed spy or two and went back to the barracks. We ask each member of the automotive industry?

Do you believe that some of the recent advertising, especially since prices have been the uppermost question, has been calculated to split the automotive industry?

In this connection we want to suggest that all advertising is not in the columns of the publications that are paid for at so much per agate line. A lot of it is on the first pages of the newspapers and in the editorial text of other publications. Every factory executive or dealer, or mechanic, is an advertiser for his industry when he is quoted in any publication, or when he speaks to an audience. Whoever listens to this spokesman is gaining an impression of the industry.

The industry that keeps its house in order, talks well of itself and leaves the impression with the public that it is a happy family is the best advertised. Often the industry that is rattling the bones in the closet is the most advertised. There is a big difference between best advertised and most advertised. The amount of space used means nothing. It is the impression that counts. We don't want to get personal, but we believe that one car that has used a whole lot of space during the past year has been very badly advertised, because its advertising was not in keeping with the spirit of the times. We must all admit that for several months the great public has been thinking utility and value. In this sense, value has been very much confused with price.

I hope that every manufacturer and sales manager in the automotive business has kept a scrap book for the last two weeks. I hope that he has in that scrap book his own and other quoted remarks on the price situation. Then I hope that the next time a bomb explodes in the industry he will get out this scrap book and read what he and the others said, compare these statements with the known facts and with his peace-time thoughts. If he will do this, he will do himself and his industry a great and lasting service.

To even the casual reader it looks very much as though some of the players in the recent crisis "cracked" and that some of them "opened Mexico for the foreigners."

There is one great service that newspapers do for this country, and that is to record history before it can be revised. These uncensored quotations are more likely to serve as food for thought than those issued after due deliberation.

No, we have not forgotten what this article was about. It was about advertising, especially advertising that was put into well spaced and fine looking advertisements while the price cutting storm was on. Such advertisements should find a place in the scrap book that we have just spoken about. We are quite confident that if the men who caused these statements to be so well displayed could read them during the jovial show season next January they would say,

"Never again!" At least we hope they would.

A communication lying on the desk here begins:

"The battle royal or mud-slinging contest now being indulged in by car, truck and parts manufacturers is doing more to hurt sales than the old fashioned salesman who used to knock the competitors' cars."

Strong words these!

But we could not help feeling that we had a good deal of the same impression. We read further in this communication and found some quotations that reminded us we might use the parallel columns that are so popular with political campaigners for showing how the other party's candidate has talked this way to the farmers and that way to the factory wage earner. You know this style of publicity. It is so effective that we decline to follow the advice of the contributor and print his contribution. It sounds too much as though we were trying to convict the industry.

Comparative facts are rather difficult to get in the automotive industry because styles and models have been changing rapidly, and during the period from the low price of 1916 to the high mark of 1920, the manufacturers mostly made vital changes in the product they are offering.

One car manufacturer advertised that the price of motor cars had risen 76 per cent during the period under consideration. The figure for his own car was, of course, much less.

Another car maker advertised that cars other than his own had risen from 19 to 45 per cent, and that his car had increased less than any other.

Obviously, some one was not stating facts.

But if either of these men was stating a fact, what good would it do? Why not prove that you are right because you are right. Why try to prove that you are right because the other fellow is wrong?

If either or both of these advertisements were right, we cannot see how the advertisement would **reduce the cost of selling.**

If either or both of these advertisements were right, we cannot see how the advertisement would **increase sales.**

We can see, if we can judge the public right, that it opens the wedge for a family quarrel in the automotive industry and that both advertisements serve to arouse the distrust of the public.

It is time that car builders realized that cars are not comparable in the sense that is implied here.

When you draw these comparisons, do you explain that your competitor has, in the meantime, changed from imitation to real leather, that he has improved his engine, that he is painting his body with eleven coats instead of six, or any of the other things that he may have done, and that you have not changed at all, that you are standing pat on the 1916 output.

The attitude of the public to-day is to admit that the war did raise the prices of a lot of things because of the scarcity of these things. The public is not entirely against the man who took advantage of the abnormal demand and raked in a few extra dollars. But the public has concluded that it is time to get back to a peace basis.

Now when it comes to talking about prices, how many manufacturers are willing to say to the public:

"Our price is, and was, fair. We put honest effort into this car and we stand behind it. Our plant is efficient and we did not pay excess profit taxes last year."

This excess profit tax is the neatest alibi in the business. In this connection we would just like to say that one of the manufacturers who spoke sharply about "profiteering" of his competitors issued a financial statement that is a good deal of a joke, as it does not show actual profits at all. It only shows "profits before Federal taxes were paid." Since reading that

statement we have had just one thought about this particular company. And that is, How much per car did it pay in excess profit taxes?

You cannot convince the public that an excess profit tax is a bad thing for business. The public may admit that this tax is not a good system of taxation and may side with business men to a certain extent in asking for its removal, but there is a deep-rooted sentiment that there should be no excess profits.

There is another advertisement which does not admit that there are any motor cars built except the two which are advertised. There is an explanation as to why these cars were reduced in price. It is a very satisfactory explanation. The argument is based upon the general movement of the times and it has an unusual bit of punch in the end in this statement:

"Because of the element of uncertainty which obscures this point we are for the present accepting orders for delivery at the new scale until January 1st only."

But this is not an article of criticism on the general subject of motor car advertising. That is another topic and so big a one, and one on which we have so much feeling, that it cannot be ventured upon at a time like this. At present we are concerned only with the advertising of the industry in a time when the industry needs it and when every component part of the industry could help. The attitude of every advertisement should be:

"I am a part of the industry and I can succeed only as the industry succeeds. The only thing that is as important as my product is the industry. I will advertise my product, and the industry, and leave the other fellows to take care of themselves."

I asked a sailor once why there were so many stories of heroism from the sea. I will never forget his answer.

It was like this:

It is not heroism. It is self preservation. Once a sailor, you accept your share of the risk. You are never in a position to gamble on to-morrow. The sea is so much bigger than any ship or sailor, that you look to each avenue of escape at each opportunity. So when we see a man in danger, we think that our turn may be only an hour off and it does not make much difference after all. If we can help the other fellow we do, and we are not risking any certainty of anything when we do it. To a man with his feet on dry land, life always looks different.

Do you get that. It is an interesting sidelight.

Now a word about trucks. The situation is a bit different here, because you can trace the price story of a truck better than you can a passenger car. In the first place, the truck, as it is priced, is without the body, which is an excellent means of camouflage for the passenger car. In this office recently the price history of nine lines of trucks which had fairly well stayed put on design were traced. The increased price of the various lines noted by percentages were as follows:

18	35
20	38½
21	40
26	46

50

These figures, it happens, agree relatively with the increases these same factories have used in their own advertisements. So we are quite certain that the figures are relatively correct.

Here comes the strange thing about this list. The factories represented by the smallest and largest percentages of increase have already reduced their prices. One factory, near the middle of the list, has increased and one near the bottom is said to have guaranteed prices.

But what we started to say was this:

One of the standpatters on the present price question is near the low end of this list and this company caused to be printed in many newspapers a very good advertisement about their line of trucks, saying that the price would not be reduced and telling how much of an increase had been made. All this was excellent advertising, but—

Included in this advertisement was a statement about prices of other trucks. This statement gave several percentages as representing increases. Four of the increases in our list are below the lowest figure in that advertisement. Two of the figures in the advertisement were higher than those we have given. It is possible that some truck has increased as much as this advertisement stated, but to date we have not been able to find it.

If the high figures were truthful (and we will admit for the sake of argument that they were) the statement was untruthful because it did not go low enough. Some of the advertisements of other truck companies say their product has been increased less than this company says its price has been increased.

The point is right here.

Do not start anything that you cannot finish. If you start talking facts, tell all the facts, because the other advertiser may tell them, and if his ad is in the next column to yours, you are making trouble for

yourself. The prospect may believe the other fellow. At least he may question you.

Always remember that split in your own ranks may open the way for the foreigner.

The whole thing reminds of a bit of newspaper history. Formerly it was the custom of newspapers, when printing one side of a story, to put at the end a general statement:

"Mr. A—— could not be found to make a statement."

But usually when this statement appeared, the rival paper would come along with a complete statement by Mr. A——.

As a result, from bitter experience, editors learned to word their notice of failure to find Mr. A—— so as to cover the rival paper finding him. The result was just as satisfactory and it saved a lot of explaining.

If we were going to prolong this discussion indefinitely, we might tell you of the truck user who was asked about this price question. He said it was of little interest to him about the prices of new trucks, what he wanted to know was what he could get for his old one.

But if we went into this question, and into the question of advertising trucks in papers that boast of the number of lawyers and doctors that read their publications, and in papers that hold circulation by fiction stories that put readers in anything but a truck buying frame of mind, we should not get through with it without using a great many pages. And

this is not the time to discuss every day business. The automotive industry is thrown into its present mood only once in long periods. So we will merely say to all who make automotive vehicles:

Advertise your own wares and the industry. Weigh your statements carefully, and if you are not going to lower your price, don't raise the price on used vehicles.

European Civil Aviation

THE German Aviation Company, having secured more liberal supplies of motor fuel from America, started a regular mail and passenger service between Berlin and Swinemünde the middle of July, and on Aug. 1 a route from Warnemünde to Malmö, Sweden, via Copenhagen, was opened. Subject to carrying 100 kg. of mails to and from Berlin every day, the company receives a subsidy of 5,500,000 marks. Aviation in Denmark is progressing favorably, and the various concession arrangements for the Danish Aviation Company (Dansk Luffartsoelskale) are now understood to have been satisfactorily completed, although official confirmation of this has not yet been received. The first move of importance is the commencement of the Anglo-Danish service, between Copenhagen, Hamburg, Holland and London. The Danish military authorities are handing over the Kløvermark site, outside Copenhagen, and also the seaplane station, but will continue to exercise some control over civil aviation. The Northern Air Traffic Company has received permission from the authorities to commence operations at Glostrup, between Copenhagen and Roskilde, and a start has already been made.

Some Hints on How to Sell Tractors in the South

The market in the cotton country is developing with the tendency for diversification of crops and the men who have been selling implements to the Southern trade apparently have a good grasp on the situation. The demonstration is the thing, but the tractor maker must avoid a selfish attitude and sell the power farming idea, rather than his own machine.

By Harold F. Podhaski

THE manufacturer of tractors or power farming machinery who may be planning to enter the Southern field within the next six or eight months, should bear in mind the fact right at the outset that down here below the Mason and Dixon line agricultural conditions are very much different than they are in any other section of the country. If these conditions are specifically dealt with, other things being equal, the manufacturer who enters the Southern field within the next half year will doubtless enjoy his proportionate share of the demand that appears destined to experience its greatest period of expansion between now and the spring of the coming year.

During the past few years the South has experienced a development of its agricultural resources that has been truly remarkable. In fact, these past few years have been the most progressive and the most prosperous in all the history of the South. Rooted as it is in the industries of the soil the business life of the South flourishes or droops according to the fortunes of the farm. Agriculture represents the very heart of Dixie's prosperity, and while manufacturing has become a vital member of the economic body and adds its full tribute to this stream of wealth, still it will always be agriculture that will measure the wealth of the South, or the lack of it as the case may be.

The change that has come to the South while it is recent in the matter of years, cannot fittingly be termed an "awakening," for it is really nothing more or less than a development of natural resources. It is rather an evolution than an "awakening."

For many years before the recent war cotton was the predominating and tyrannical crop of the South. To the virtual exclusion of all other crops the Southern farmer grew cotton, for the simple reason that he knew cotton and that was about the only crop he did know. With the aid of a bunch of negroes and a few mules the Southern farmer was able to handle a large acreage of cotton, and power farming machinery had no part in his life.

To-day cotton still holds its place as the most important crop of the South, and it will always continue to hold that place, but diversification during the past four or five years has brought about many radical changes. There has been an enormous decline in cotton production, a breaking away, as it were, from cotton tyranny and the giving of new emphasis to food production that marks one of the most important events in the agricultural history of the South and is, therefore, the most potent fact in its economic life.

Another matter of vital importance to Southern agriculture that has brought about the remarkable expansion of the tractor and power farming industry in this part of the country is the migration of hundreds of thousands of negro farm laborers to the North and East, where they have entered industrial fields of endeavor and where they will doubtless remain.

During the late war it is estimated that about 600,000 Southern negroes went North, and of this number 400,000 did not return. As negroes have always been the Southern farmer's principal source of labor this migration has brought on an acute labor shortage, and it is clearly pointed out that the only way this problem can ever be solved is through the broad and general use of power machinery in the agricultural industry of the South.

That is the crying need of the South to-day because of this existing and acute labor shortage, and the decrease in cotton production with the resultant trend toward diversification.

These are the important facts that the manufacturer of tractors or power farming machinery seeking to enter the Southern field must bear in mind.

Purely and simply it is just a case here in the South of "selling the idea." And the best way to "sell the idea" is to prove to the farmer's satisfaction that power farming offers him the only opportunity for the solution of his labor problem.

John Jones, Southern farmer, is not interested in the fact that the tractor was made by the Smith company, or the Brown company, or that its specifications are so and so—what he wants is the absolute proof that here is a time-saving, muscle-saving, money-saving device that will enable him to plant, cultivate and harvest three times as large an acreage with a given number of laborers as he could ever hope to handle with the same number of laborers under the old man-and-mule régime that has prevailed so many years in the South. And there are any number of good tractors on the market that the farmer can purchase and operate on his farm at a profit.

Right now not one-half enough labor is available to Southern agriculture and a great deal of this is of a mediocre type. In common with other agricultural regions, of course, the South is availing herself more and more widely of the use of modern power machinery on the farm, and in the course of natural progress it is only

reasonable to presume that this step was bound to come. Still, this critical shortage of labor has hastened its coming and in view of present conditions in the agricultural South it appears certain that between now and next spring the tractor and power farming industry will experience its greatest expansion in this section.

During the early spring of the present year when cotton was selling at forty cents a pound farmers of the South agreed that at that price cotton offered them their best opportunity. Therefore, forgetting their lessons of the past, thousands of them went back to the old one-crop idea. A bearish effect on the market has beat down the price of cotton almost \$50 the bale, and as this would have represented the producer's profit he finds himself up against a critical situation. The time for gathering the crop and marketing it is at hand, and with an estimated yield of close to 13,000,000 bales Southern farmers stand to lose their entire profit selling at the present prices quoted for the staple. In round figures this loss reached the enormous sum of something over \$600,000,000.

As a result the American Cotton Association, which includes in its membership virtually all of the cotton producers of the belt, has devised a plan that will bring about a reduction in cotton acreage during 1921 of 50 per cent, and as this abandonment of acreage is to be devoted to the production of food crops it will be readily noted that there will undoubtedly be an enormous demand for modern power machinery over the Cotton Belt before planting time comes around next spring. The association takes this drastic step to keep cotton prices from being beat down any further by the bearish effect on the market.

The reason this increased demand for power machinery is bound to come lies in the fact that cotton is generally best handled by human labor, while the reverse is true of food crops.

And with a shortage of labor, in addition, that promises to be still more acute next year and a 50 per cent reduction in the cotton acreage it is absolutely certain that the next half-year or so will witness the increase in demand for power farming machinery as set forth above.

The selling of tractors in the South, therefore, has evolved itself into a campaign of education which is seeking—and with remarkable success it might be added—to “put over” the power farming idea. This is being accomplished mainly through the efforts of manufacturers who have located branches in the South, and with the able co-operation of their dealers. Most of these branches that have been established have been located in Atlanta as the logical center of the Southeastern field, and used by some of the manufacturers as headquarters and a distributing point for the entire South.

Two mediums are employed in the conducting of this campaign:

(1) Demonstrations which are held in agricultural centers all over the South at frequent intervals; and,

(2) Wide publicity in virtually every newspaper of the South.

By publicity I do not mean paid advertising in the newspapers, but editorial expression in the main, and the spirit of co-operation being displayed by Southern editors in advancing this issue is worthy indeed of the heartiest commendation. The newspapers will do this themselves if the editors are not offended by a worthless publicity.

As regards the demonstrations these are arranged by the branch managers for the manufacturers or their

dealers, with the aid of county farm agents and members of the agricultural faculties of various educational institutions or officials of the state agricultural departments. They are held at some central point and farmers from miles around are invited to attend. At Thomasville, Ga., an organization has been formed known as the Commercial Association of Thomas County.

The sole purpose of this association is to advance the power farming idea in that section, and so successful have been the demonstrations and meetings that have been held that similar organizations are being formed by trade bodies in other counties throughout the South. It is recognized that beyond all doubt power farming will bring about the more rapid development of the South's agricultural industry, and this will naturally reflect to the welfare of all lines of business. Therefore many prominent business men have interested themselves in this work and the campaign of education.

Discussing a recent demonstration at Thomas County, S. T. Kidder, Jr., manager of the Commercial Association of Thomas County, said:

“I have seen literally thousands of winegrass farmers—backwoods people, if you like—flock to our demonstrations. They come in every available means of locomotion, trucks or farm wagons, carioles or on horseback, and many of them walk, but the principal point is that the association through its work has got the farmers interested and they come to our demonstrations in vast numbers. When you get such a crowd together and show them twenty tractors turning over the land faster than they ever imagined it could be done, harrowing acres in the time it would take a man and a mule to work just a few yards, and when they see ditches dug in a few moments that are three feet deep and a hundred yards long; when they see stumps yanked out in a moment's time, see butter churned, wood sawed and feed ground, all by the mighty hand of machinery, let me tell you they go away absolutely convinced and sold on the power farming idea.”

Undoubtedly Mr. Kidder knows full well whereof he speaks for investigation develops the fact that as many tractors have been sold and are being sold in Thomas County as in any other county of the State of Georgia.

It is probable that there is scarcely a newspaper in the South that has not given editorial expression of a favorable nature to the use of modern power machinery on the farm, it being recognized that power farming machinery offers the Southern farmer his only means of solving the labor shortage problem. This spirit of co-operation on the part of the newspapers is accomplishing as much in this educational campaign as any other single factor, and it is equally as important, if not more so, as the demonstrations that are frequently held. A splendid example of this sort of publicity was recently published as an editorial in the Atlanta Journal, a portion of which follows:

“In some districts in the South the emergency occasioned by the farm labor shortage has grown almost as grave as in England during the latter half of the World War, when the ranks of the tillers were reduced to a point where one man was left to do the work of five or ten. The island seemed in peril of famine. But a host of tractors, equipped with giant headlights, so that they could be operated by night as well as day, were imported from America and set to the tasks of food production. The result was a series of harvests, such as the country never reaped in the most plentiful times of hand labor. The cultivated acreage was largely increased and with it the yield. A like story is told of many parts of the United States. In the South power-driven machinery

bids fair to solve problems which otherwise would wax overwhelming.

"The services of such machinery are not limited to labors of the field, but extend to all aspects of rural life—economic, domestic, social. Whether it be the pulling of stumps, or the drawing of water, or the lighting of the family reading table on a winter's night, the task has its ready Aladdin in some motor mechanism. The trip to market is shortened; school and church are made far more accessible; the visiting of neighbors much easier; household drudgery is lightened and time allowed for tonic recreation. It is not simply upon rural labor, then, that motorized machinery promises to exert so potent an influence, but also upon farm life. In the end this human side of the equation will be far and away the more important, for it will tend to hold and to draw more men and women to the prime sources of production."

This, certainly, is a splendid type of publicity. It drives home the arguments and the points necessary to prove to the average farmer the advantages to accrue from modern power machinery in the pursuit of his daily work. It is the sort of publicity that is being carried on through the efforts of manufacturers and dealers all over the South, and it is probably several hundred per cent more productive than the same amount of paid advertising space would be in the same newspapers. Certainly more so than cheap puffs for individual machines.

Managers of manufacturers' branch houses in Atlanta distributing tractors and implements in this field agree that the demand to-day is four times as great in the South as was the case only five years ago. Especially has this demand increased within the past two years, and in the tractor business alone the past two years witness an increase amounting to about 500 per cent.

Air Brakes for Trucks and Trailers

THE use of trailers has always presented a difficulty due to the lack of braking facilities on the trailer. In railroad practice the locomotive is not required to stop the train with its brakes, but controls air brakes on all the cars and so is able to handle an indefinite number of cars on down grade.

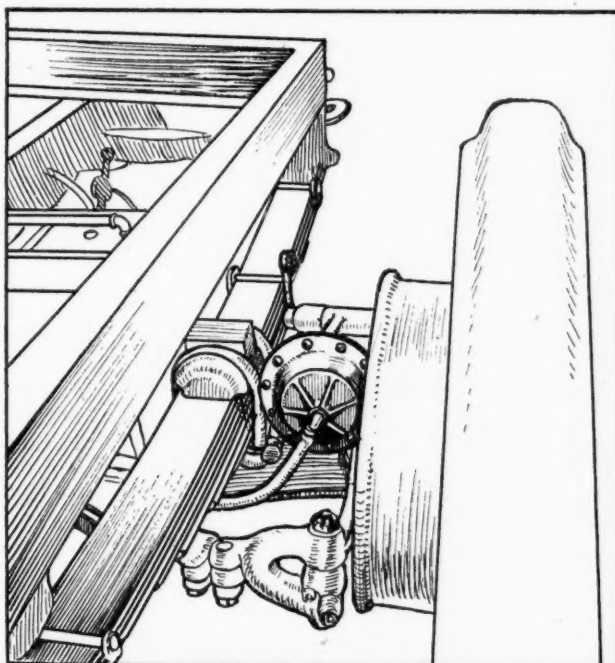
Air brakes are now available for trucks and trailers. These are the Lane air brakes, manufactured by the Lane Air Brake Co. They are applicable to trucks as well as to trailers and can be used for braking more than six wheels with added equipment. Connection is made between the truck and trailer by flexible couplings. The control lever is located on the steering column and the amount of pressure applied is directly proportional to the amount of motion of the control lever.

For ordinary installations an "accumulator valve" is inserted in a cylinder head in place of a priming cup. This valve is automatic in action and supplies air (or spent gas) at pressures up to 175 lb. per sq. in. and maintains it. Where more than six wheels are to be braked an air com-

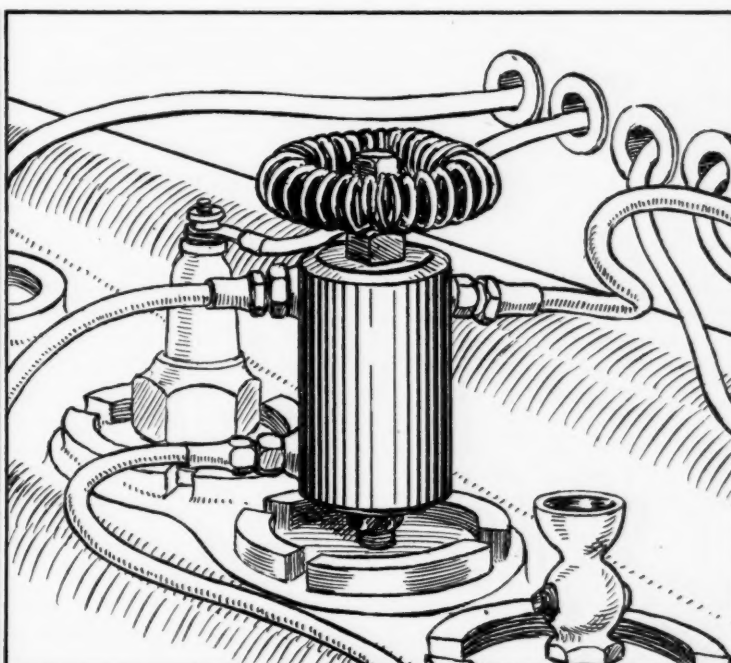
pressor is supplied. A storage tank is employed to supply the compressed air when needed. This tank is sufficiently strong to hold the maximum pressure allowed for by the accumulator valve, and its size is 4 in. by 24 in.

There is a duplex gage mounted on the dash board which shows the tank pressure and the brake pressure. The control valve mounted on the steering column is the only adjustment required in the system. An automatic release valve releases the pressure whenever the pressure is suddenly lowered in the line. This device provides for the quick release of the brakes.

The brakes are actuated by diaphragms instead of pistons and plungers. There are three sizes of diaphragm. The one usually employed is the medium size and has an effective area of 20 sq. in. with a stroke of $2\frac{1}{4}$ in. The diaphragm is made of rubber with heavy canvas inserts and enclosed in a bronze case. The diaphragm assembly is mounted either on the frame or on the rear axle. It is claimed that when mounted on a Hotchkiss-drive truck the brakes will operate even should a rear spring be broken.



Diaphragm mounted on rear axle



Accumulator valve installed

A Novel Setting in Which to Hold Sales Conferences

The physical surroundings in which the sales school or conference is held will strongly affect its success. A Cleveland concern has provided an exceptional setting for conferences of its salesmen. The following description of this conference ground will offer suggestions to other sales managers.

By Normian G. Shidle

CONFERENCES and conventions play an important part in the development and administration of nearly every sales department. They should be made of maximum value for everyone concerned. The physical surroundings in which the convention is held constitute an important factor in achieving or failing to achieve maximum effectiveness. For this reason, a description of Nela Camp, the place in which sales conferences of the National Mazda Co. are held, is of practical value as well as of exceptional interest.

The camp is located at Nela Park, the East Cleveland experimental station and home office of the National Lamp Works. The entire station rests upon the top of a high hill. Great care is taken in making the grounds beautiful with well-kept lawns, trees, flowers, and shrubs. The work of this plant is of such a nature that it can best be done in segregated units, and as a result the various departments, to a large extent, occupy separate buildings, all of a similar architecture. The whole resembles closely a typical American college campus.

Separated from the rest of the plant by a wire fence, its boundaries distinctly outlined, is Nela Camp. It comprises a plot of ground about ten acres in area, and is surrounded on two sides by a deep ravine densely covered by primitive woodland. Within the boundaries of the camp the grass is closely clipped, the plants and shrubs well cared for, the whole effect being that of a beautiful cosy corner of a city park. Trees, flowers and shrubs are plentiful. There is, however, no hint of stiffness or formality; nature has simply been aided in the multiplication and amplification of her gifts.

Within this pleasant open-air camp, high above the smoke and dust of the city, provision has been made for the holding of sales conferences. The accompanying photograph gives a general view of the camp and shows to a limited extent some of the things with which it has been provided.

Twenty-five roomy tents provide sleeping accommodations for fifty to one hundred men. Conveniently located at the point where two rows of tents meet is a permanent toilet and bath house. Within this structure are shower baths with hot and cold water, individual lockers, and all modern conveniences for making tent-life comfortable and agreeable. One other permanent building is included in the camp equipment, a large dining hall, probably referred to more accurately as a mess hall, because of its resemblance to the army structures. In this dining hall meals are served to the salesmen during the conference.

In addition to these provisions for eating and sleeping, there is a long covered concrete platform, on which most of the regular conference sessions are held. This is artis-

tically covered with an arched lattice work, over which thick green vines are grown. With these provisions, the most fundamental needs are probably met. But many other accommodations render Nela Camp a place not only for the effective transaction of serious business but also for spending a few days of real enjoyment and healthful pleasure.

Chief among these, perhaps, is a perfectly kept tennis court, equipped with overhead electric lights which make playing at night as pleasant and easy as during the day. An outdoor swimming pool, an indoor baseball diamond, a croquet ground, and equipment for other outdoor games of various kinds complete the fixed provisions for entertainment during the hours not devoted to actual consideration of sales problems.

This brief description of Nela Camp shows it to have certain outstanding characteristics:

1. The mode of living during the conference is necessarily simple; a mode of living which is inexpensive and at the same time pleasant and healthful. It is conducive to clear thinking, hard working, and hard playing.
2. The conferences are confined to the summer months, since withstanding the rigors of an Ohio winter in a tent would, of course, be impracticable.
3. The very physical surroundings and mode of living throw the men together very closely; a spirit of unity, general good-fellowship, and of organization-consciousness grow up.
4. There is opportunity and encouragement from these same surroundings for a freedom of movement and a freedom from restraint, such as cannot be experienced in the more restrained atmosphere of the dignified city hotel.

It is upon these characteristics, each of which depends primarily upon the physical surroundings, that the success of these sales conferences has rested to a large extent.

A glance at the accompanying photographs and a brief consideration of the description of Nela Camp will bring home forcefully the advantages of holding a sales conference or a sales school in such an environment as against holding it in the more usual way.

In the first place, a great saving is made in two very essential elements, time and expense. By living in this segregated community, rising together, eating at the same time, there are fewer delays in getting sessions started, less difficulty is experienced in "rounding up the crowd," and fewer of all of those petty delays are encountered which go so far to eat up valuable time at most sales conferences.



Top—General view of Nela Camp. Bottom—Nela Camp tennis court, equipped with electric lights for night playing

The expense of holding a conference under these circumstances is obviously less than of holding it at an expensive city hotel where prices for rooms, meals, and everything else are excessive. Food and lodging must be provided and paid for at any conference, and at the Nela Camp conferences they not only cost less but are provided in a form much more attractive to the average man who welcomes a few days of outdoor life.

Then, too, the proximity of this conference ground to the home offices and experimental laboratory of the company brings important advantages. The newest technical developments in the various phases of lighting can be actually demonstrated to the salesmen without inconvenience or loss of time. They can be taken to the factory in one minute and there can be explained the various experiments which are constantly going on, together with their relation to the immediate problems of the trade, etc.

Any company executive can be called into the conference on a moment's notice and can be consulted about any problem which may have come up at the session. These executives are at hand for regular addresses, as well, and in every way the convenient location of the camp adds to its effectiveness as a conference ground.

The informality and freedom which is invoked by physical surroundings present at Nela Camp develops a comradeship among the visiting salesmen that makes them feel very definitely that they are all a part of the same organization; that their interests and aims are identical, and that they are closely associated with one another though they may come into personal contact only once a year. This feeling is one that nearly every sales convention attempts to instill. At Nela Camp it is conveyed through the very atmosphere and mode of living in a way that is far more effective than any number of speeches, orations, or "pep" talks.

Many Americans during the recent war became familiar with the rapid development of a spirit of fellowship in

the Army between men in the same company. The mere fact that a group of men found themselves living, eating, and sleeping together in an intimate fashion produced of itself a feeling of group unity; thus each company barracks in the Army developed within its members a certain feeling of company loyalty and adherence. The physical surroundings and mode of living were probably the most important factor in this rapid development. So it is with the sales conferences held at Nela Park.

Salesmen at a convention are apt to desire other entertainments during leisure hours than merely games and exercises which require physical exertion. To obtain such diversions, it is not even necessary at Nela Camp to leave the Park and go downtown to the theaters. Entertainers are brought to the camp at night and vaudeville shows, boxing bouts, music of all kinds, and other similar entertainments are usually a part of the program. It might be briefly said that a Nela Camp sales conference provides for the visitors all the desirable points of a short outing in an Army camp—the healthful outdoor life, the physical exercise, the community living which brings with it a spirit of honest fellowship. But at the same time the discipline, restrictions, enforced regularity, and all the other undesirable features of such a camp are eliminated.

The sales manager of any automotive concern who contemplates the establishment of a sales school for training salesmen or who desires to improve his methods of conducting sales conferences will be well repaid by a visit to Nela Park. The exact scheme which has been worked out there is not applicable, of course, to every concern, but the general idea offers some valuable suggestions. Not every firm can build their plant on an open hill-top and attach to it several acres of beautiful camp in which to hold sales conferences. Nearly every firm, however, by the exercise of some ingenuity can embody in its conferences some of those desirable features which are illus-

(Continued on page 780)

The Prospects for Oil from South America

This report of the active search for a supply of oil in the Latin American countries indicates that the United States is not backward in looking to other fields. It should be interesting to the exporters.

AT the present, when the principal countries of the world, and especially the United States and England, are competing for the possession of the sources of petroleum, and when the different countries are being explored in the hope of finding new oil fields, it is interesting to consider which districts are most likely to become petroleum producers. It is our intention to indicate the present possibilities as regards South America.

In each of the ten South American republics prospectors are studying the geological conditions. Almost every nationality is represented, and while North Americans are in the majority, there is a goodly number of Japanese, especially in Chile and Peru.

The attraction of Chile is based upon its enormous deposits of bituminous shale, the existence of which in the neighborhood of Lonquimay has been known for many years. Samples of this shale at one time were shipped to England, but the report made thereon was unfavorable, the operating cost being considered too high. Now that industrial conditions have changed, the distillation of these petroliferous shales may be considered commercially practicable.

In Bolivia, the prospectors are chiefly Americans and Chilians; the latter are already interested in oil wells at Santa Cruz, Caracoles and Calacoto. A powerful American syndicate has completed all preliminaries necessary for boring wells yielding free oil, of which they have found certain traces on the Bolivian slope of the Andes, at the same altitude as that at which are found the bituminous shale deposits of Chile. This field is supposed to be of considerable importance.

Unfortunately, Bolivia is poorly suited to enterprises of this kind. Some other sources of crude oil have been staked out already in different parts of its territory, in the province of Tanja, for instance, and at Rurrenabaque; however, a glance at the map suffices to show the difficulties that have to be overcome in transporting the petroleum of districts not connected by railroad lines.

As far as may be judged from the results of experiments already made in Argentina, that country seems to have important sources of petroleum. At two points, particularly, borings made by Government engineers revealed the existence of layers of oil in the free state; at Comodoro-Rivadavia the average production has been 400 cubic meters per day since February last, and at Plaza Huincul two wells were sunk, of which one yields 2,700 liters per

day of a very fluid oil especially rich in volatile products, which is distilled on the spot. These concessions are Government property but there are also some private enterprises in the vicinity. These oil deposits, particularly that of Plaza Huincul, seem to be of considerable importance. Some difficulties, due to the infiltration of water, have retarded the exploitation of the wells at Comodoro-Rivadavia; the company is at present installing electric pumps from which better results are expected.

The oil fever is raging particularly in Colombia, where no less than 160 companies of prospectors are operating and where eighty concessions were asked for within a period of three days following the going into effect of the law concerning hydrocarbons. A hasty examination of this law does not reveal any clauses prejudicial to foreign interests, but one of the sections stipulates, as a condition for the granting of concessions, a loan of twenty million pesetas to the Government.

The best concessions (so far as they are known) are in the hands of three or four American companies and two or three English. The Standard Oil Co. was the first to send prospectors to Colombia. During the war, when the company was practically in control of the situation, it purchased through agents at Cartagena and Barranquilla about forty concessions along the Atlantic Coast. The majority of these are located between the mouth of the Magdalena and that of San Jorge, extending thence into the valley of the San Jorge as far as San Benito and from there to Chimi, Cereze and Punta Arbolete.

In a general way it may be said that the petroleum deposits of Colombia run parallel to the Magdalena as far as the District of Nare, with ramifications which may be classified as upper layers, which have given rise to the filtrations of the lower layers. Among the latter are the rich pockets of Barranca Bermeja in the Carare basin; those at Tubara on the coast near Puerto Colombia. Also to the north of Bermeja, in the region between Gamara and Ocaria, very interesting sources have been discovered. Near the Venezuelan border, in the basins of the Catatumbo and of the Zulia, an American firm has begun the installation of machinery for the exploitation of deposits known under the name of Barco.

It will be seen from the above that the United States is looking about with a view to supplementing its national production which no longer suffices for its own needs.—*La Technique Moderne.*

How Great Britain and France Divided Old World Oil Fields

IN pursuance of the agreement of San Remo, France and England undertake to support each other as regards their respective nationals in all common negotiations which will be conducted with the Rumanian Government—1, for the acquisition of oil concessions,

shares or other interests belonging to the petroleum concerns of the Deutsche Bank and of the Disconto Gesellschaft; 2, for the concession of oil fields belonging to the Rumanian Government.

The agreement, therefore, covers on the one hand the

taking over of the business of the German operating companies, and, on the other, the extension of the field of operation, if possible.

In the two cases the British and French interests will be placed on an equal footing. The same proportion of 50 per cent will be accorded to each country, whether the acquisition of shares belonging to enemy concessions or the formation of new companies is concerned. It will also be observed as regards representatives in the management and the number of votes.

In the territory of the former Russian Empire, the two governments will give their common support to their respective subjects in their common efforts for obtaining concessions and export facilities. The agreement therefore provides for Franco-British cooperation in the quest for concessions.

As regards colonies and spheres of influence, the most important problem was that of Mesopotamia. The situation was briefly as follows: England held the oil fields, but France had extended its sphere of influence to territories over which the transport of the oil had to take place.

The British Government has undertaken to accord to the French Government (or to anyone designated by it) a share of 25 per cent, at the current market price, in the net production of crude oil of the Mesopotamian oil fields.

If the exports are carried on by a private company, the British Government places at the disposal of the French Government a share of 25 per cent in that company, and the price to be paid for this interest is not to be any higher than the price paid by any other shareholder of the oil company in question.

It is equally agreed that the company will be permanently under British control. Finally, the French interests will be completely maintained, even in case native interests furnish a portion of the capital of the company.

As regards the oil fields of Persia, the British Government undertakes to support all arrangements by which the French Government may secure from the Anglo-Persian

Oil Company the supply of petroleum delivered through pipe lines from Persia to the Mediterranean, across territory under French mandate, and in connection with which France has afforded special facilities. The petroleum thus reserved for France will also constitute 25 per cent of the total quantities which pass in transit across territory under French influence.

In consideration of these two agreements concerning petroleum from Mesopotamia and Persia, the French Government consents to the construction of two distinct pipe lines and to the transportation of petroleum from the oil fields to one or more ports on the Eastern Mediterranean. It agrees to afford all facilities for the passage and at the same time facilities at the terminal ports for the acquisition of the necessary ground area and for the construction of depots, railroads, refineries and wharfs. The same facilities will be accorded by the British Government in case an oil company should desire to construct a pipe line and a railroad to the Persian gulf.

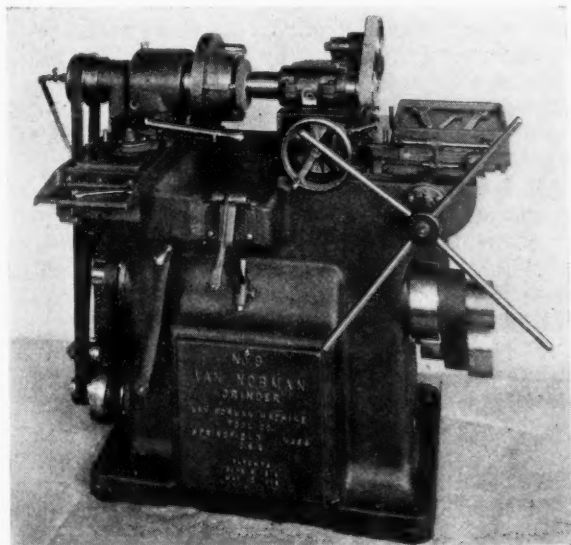
The agreement of April 24 finally covers the old French and British colonies. But in this connection it merely points out that the French Government will accord facilities to any French-British company of good repute for the acquisition of oil concessions in French colonies, protectorates and zones of influence, including Algiers, Tunisia and Morocco. It is worthy of note in this connection that the French Parliament has decided that in any French company thus formed the French interests must constitute at least 67 per cent.

In the British Crown colonies the English Government agrees to accord to French subjects who wish to do prospecting for oil and to exploit concessions, the same advantages as France accords to British subjects in French colonies.

However, the agreement makes a reservation of the case of negotiations begun by private interests, either French or British. It does not apply to concessions obtained in this way.

A Rapid Production Bore Grinder

THE Federal Bureau of Plant Industry is distributing a bulletin on "The Castor Oil Industry." It is industry. Compactness and rigidity of construction have been aimed at, in order to eliminate vibration as well as



handy appliances for setting and convenience in operation.

The machine is designed with a self-contained motor drive, the motor being arranged in the base. Ball bearings are used on the pulley and drum shafts. A large, deep gap in the body permits of grinding work of large diameter. The ball-bearing work head is arranged on a slide having a cross movement controlled by a quick-acting lever. This cross movement draws the work into an offset position in relation to the cutter wheel for loading or unloading and for test or inspection. The cross movement permits the grinding of the hole and also face grinding with one holding of the piece. A self-acting brake mechanism stops the rotation of the work holding spindle when slide is drawn to offset position for loading or testing.

The machines are equipped with a ball bearing type of quill spindle for carrying the grinding wheel. The maximum depth of hole which can be ground is 6 in., the swing of the work holding fixture 24 in., the forward movement of the work slide to test work 8 in. and the speed range of the head spindle from 72 to 431 r.p.m.

THE Federal Bureau of Plant Industry is distributing a bulletin on "The Castor Oil Industry." It is No. 867.

How the British Labor Unions Became a Power in Politics

There has recently been much talk of American labor unions entering politics. The vision is based upon the success of the British Labor party. In this article is traced the history of the British Labor movement.

By Clarence H. Northcott

FOR some time past the most burning question in industrial relations in Great Britain has been: "Will trade unionism choose political or industrial methods for achieving its ends?" The answer is one of interest and significance to unionists, employers and the public alike. To the first, the decision means a choice between constitutional and revolutionary methods of attaining its ends. To employers and the public a decision in favor of industrial action implies an intensification of the strike troubles and dislocations that of recent years have become so common and so grave. One is undoubtedly right in saying that the great majority of employers and of the thinking public do unhesitatingly prefer political action by trade unions to direct action, while recent events have shown this choice to be that of the majority of the unionists themselves.

This preference for and endorsement of political action is distinctively British. It is quite contrary to American practice. In the United States, all but a small minority of trade unionists are themselves opposed to political action. Past experience of political action was bitter and tragic, while the difficulties of the present to those who are seeking to establish common political action on the part of American workers speaking many languages are likely to prove almost insuperable. American employers are candidly, and probably rightly, afraid of the methods of education through which common political action by American trade unions could be established. They would rather themselves be the educators and schoolmasters to carry out the process of Americanization. They mistrust the men and the methods by which political action by labor in America must be brought about. The American public, outside of trade union circles, unhesitatingly shares this view. It has no liking for a Labor party in politics. If it has to be burdened with trade unionism, let the unionists confine themselves to industrial matters.

This contrariety of attitude alone might seem to make the British position of little interest to American manufacturers. Yet other facts enter in to increase the distinction in circumstances. The British are a fairly homogeneous race, speaking one common language and united by common traditions, customs, beliefs and ideas. If the English and the Scotch may seem to be distinct, let us remember that the industrial centers of Scotland are in the Lowlands, and that the people of the Lowlands are of the same race as those who live in the North of England. There is no great difference in attitude, outlook and prejudices between a Scotchman and a Yorkshire, or between a mechanic on Tyneside and one in Glasgow. The work of Great Britain is done from the Midlands north to Glasgow and Dundee, and there is as close a resemblance between workers in this area as there is between a New

Englander and a Virginian of pure American stock. Contrast this homogeneity, born of common racial origin, common speech and a common social heritage, with the many-tongued heterogeneity of an America which is the melting pot of the nations!

Yet in one point the experience of Great Britain may prove of value and significance. In this matter, though, one must proceed cautiously, for one has to depart from solid reason into the realm of conjecture in order even to make the suggestion. May it not be that the trend of industrial development is to bring the more conservative of labor elements into the sphere of organized representative government? The British genius and temper, alike in the colonies and in Great Britain, run readily in this direction. The Britisher is keen on politics, the worker not less so than the squire or the scholar. While this predilection for politics subsists, there will be a political side to trade union activity, which will represent the substitution of reason for the brute force of the strike. Is the evolution of American trade unionism on its more conservative side not equally likely to fall under the sway of reason, exercising itself along constitutional lines, rather than fall into the red hands of anarchy and rapine? We conclude, therefore, that the British position is of interest to American manufacturers, far and wide.

In Great Britain the industrial form is much the older form of trade union organization. Trade unions were benefit and protective societies, devoting more attention in their earlier days to benefits than to the protection of trade interests. There were many legal disabilities under which they suffered from which Parliament alone could give them relief. They sought to get these measures carried through to Parliament by their leaders, but the Trade Union Congress, right up till 1885, distinctly opposed these efforts to secure relief to labor by legislation. The rise of Socialism from 1885 onward and the interest of the public generally in humanitarian aspects of the life of the laborers, gave a militant note to trade unionism. A powerful demand was created for an eight-hour day, which could only be secured by legislation. This desire for legal regulation of the hours of labor, combined with the adoption of the tenets of State Socialism, turned the thoughts of trade unionists to parliamentary and municipal activity. Socialists worked indefatigably to translate their views into draft bills of Parliament which local Members of Parliament might be induced to introduce or support.

A movement, therefore, sprang up for labor representation, that is, for the presence of working men in Parliament. There was as yet no idea of an organized party or of the influence which it might exert in the government of the country. As early as 1874 fourteen workmen were

among the candidates at a general election, two of them winning seats. In 1880 a third worker found a seat, and in 1885 eight more were elected, six of them being miners. These men were grouped generally with the Liberal party under Gladstone's leadership, and were only the spokesmen of the views of the workers, not the militant crusaders of a new social order waiting to be set free from the thraldom of the present. Their position in the House of Commons had no more significance in the evolution of political labor than the presence of a few single-taxers has in the House of Representatives in Washington.

But in 1887 James Kerr Hardie set forth the necessity for an entirely independent labor party, and in 1892 was elected to Parliament along with fourteen other workers. In 1893 he set up the "Independent Labor Party," every one of whose candidates was unsuccessful at the next election. But the new movement had started. Labor had entered the political field, even though represented by its more radical branch. The more conservative section was not long in following the example set. In 1898 the President of the Trade Union Congress suggested that

a committee should be appointed to draft a scheme of political organization for the trade union world on the ground that just as trades federation is a matter of vital necessity for industrial organization, so also will a scheme of political action be a vital necessity if we wish Parliament to faithfully register the effect of the industrial revolution on our social life.

A Labor Representation Committee was set up to organize for the elections of 1901, in which, however, they met with little success.

But in 1901 a famous law decision quickened the new political movement into fierce life. A small strike had occurred on the Taff Vale railway in South Wales, and eventually been indorsed by the Amalgamated Society of Railway Servants. The railway company sued the trade union for the damages suffered through the strike. Contrary to what seemed the provisions of the Trade Union Acts, which governed the formation and constitution of trade unions, the verdict went in favor of the company, and the union suffered heavy damages. This verdict made the whole trade union world tremble. A strike might henceforth at any time lead to confiscation of all a union's funds. The legal breach in the Trade Union Acts must be healed by another act, which trade union representatives must introduce, explain and fight for. The Taff Vale judgment drove British labor into politics for its own protection and defence. At the election of 1906 it obtained 41 seats; in 1910 it held its own; at the election of 1918 it reached a total of 59 members, securing 25 per cent of the votes polled in Great Britain. In the interval the Labor Representation Committee had become the Labor Party, had admitted workers "alike by hand and brain" into the party and had reached a membership which to-day stands at 3,000,000.

This historical sketch depicts what seems the natural evolution of British trade unionism into politics and shows the forces that have motivated that evolution. To these must be added the Britisher's predilection for discussion and compromise. To education, agitation and persuasion he has no inherent objections. Any Sunday afternoon those who visit Hyde Park, London, may hear the most revolutionary speeches uttered without comment or cavil. The British people prefer constitutional agitation, with considerable freedom of speech and thought, to direct action, or the use of the general strike.

The significance of the entrance of British labor into politics has really come to lie in this last named preference. The issue in industrial relations, so far as peace is concerned, has always lain between "industrial" unionism, which prefers the strike and political unionism, which

chooses the ballot box. Unionism in Great Britain has been facing this issue for many years, and the distinct predilection of the majority of Britishers for political action on the part of trade unions is motivated by the nature of the alternative. The language and actions of industrial unionists are alarming. The earliest expression of their aims dates from 1905, when we find them describing the function of industrial unionism thus:

to build up an industrial republic inside the shell of the political state, in order that when that industrial republic is fully organized it may crack the shell of the political state and step into its place.

In that industrial republic the workers, through their unions, were to control the workshop, elect all foremen and regulate the routine of labor. Later, we find the British workers exhorted through this propaganda to break the power of private capitalism by means of the general strike.

While this fiery propaganda did not impede the political organization of labor, it produced a perfect epidemic of strikes in 1913 and 1914. These strikes were different in kind and in aim from those in earlier days. They were intended to supersede collective bargaining and to make the life of capitalists intolerable in the hope that they would be glad to hand over their establishments to the workers. To this socialistic ferment the war added a revolutionary element which, in its turn, arose from dislike of the parliamentary method. Certain socialistic and syndicalist groups, rebelling against the leadership of older and more cautious men, set up a "rank and file" movement, engineered by shop stewards. These militants produced a whole series of strikes throughout the munition centers, wherein the burden of complaint was that Parliament was discredited and the worker must rely on force and the strike weapon.

Twelve months ago this movement looked serious. The last of these strikes, that in Glasgow in January, 1919, was frankly revolutionary. Other threatening movements were on foot in the trade union world. The miners who were demanding the nationalization of the mines on a syndicalistic plan, and were threatening and carrying out their threat of strikes, were supported in a triple alliance by the railway men and the transport workers. These three groups had it in their power to tie up the whole industry of England. In July, 1919, they proposed to ballot on the question of a general strike, though next month their executive leaders decided to postpone the ballot. This question of direct action, as the policy of the general strike had come to be called, was submitted to the annual meeting last September of the Trade Union Congress. The Congress made no definite pronouncement, though the general strike was suggested as the method to be adopted for an end so highly esteemed by the trade unionists as was the nationalization of mines.

Two events at about the same time showed the difficulty and futility of action directed, as is a general strike, against the whole community. A police strike in July failed utterly and led to the police force being purged of its extreme elements. Then came the railway strike of last September, which was a direct challenge by the railway men against the Government. The latter, supported by the public, accepted the challenge, and eventually won. The successful settlement of the strike was due in part to the mediation of leaders of other trade unions who recognized the seriousness of a situation where success on their side would have been followed by revolutionary measures they abhorred and would have failed utterly to control.

The political situation in the country last year also contributed to the unrest prevailing. The election of 1918 left the labor world sore. They had pinned great hopes

upon it. During the war they were preparing for it. They had drawn up, and by countrywide discussion, endorsed, a program of reconstruction entitled "Labor and the New Social Order." This was a constructive program the chief points of which were the establishment of a minimum wage, democratic control of industry, the abolition of capitalistic production, nationalization, a levy on capital and a large measure of state socialism. Labor men had hoped that this program would have carried them into power. Instead, a wave of personal confidence in Lloyd George swept other parties into a maelstrom of confusion. Labor secured 25 per cent of the votes of the electors, equivalent to a representation of 175 members in Parliament. Instead, it had actually only 59 members. The disparity between these numbers, the circumstances of the election and the war-time experience of the workers disturbed their confidence in parliamentary methods. Hence the troublous strikes in Glasgow in January, the police strike and the railway strike.

But the peace treaty, on which labor had pronounced views, set up a reaction against the supremely victorious government, and by-elections began to result in the return of labor members to Parliament. There was created a hope that enough such members could be sent to Westminster to enable labor to obtain by legislation all its aims. In consequence, political unionism grew in strength and labor devoted itself to propaganda and educational methods in order to obtain the votes of "workers alike by hand and brain."

In the midst of this reaction in favor of political unionism a special Trades Union Congress was held on March 12, 1920, to decide between the issues of political and industrial unionism. The main issue was the choice between two methods of compelling the Government to agree to the nationalization of mines. Direct action, that is, a general strike, was set over against political action, in the form of intensive political propaganda in preparation for a general election. The result was never in doubt. Even Frank Hodges, secretary of the miners' federation and chief advocate of direct action, had to admit that the balance of argument was on the side of political action. All he could say against political action was that the miners no longer had faith in Parliament, since they had been tricked in regard to the Sankey report. They had expected that the Government would accept the verdict of that report in favor of nationalization.

The arguments of labor leaders like J. H. Thomas, of the railway men, and J. R. Clynes, of the general workers, reveal the spirit, hopes and aims of the more moderate

section of British political labor. The following quotations will suffice. Thomas said, among other things:

The right to strike is the power which has raised the workers to the economic position they occupy to-day. It is a right which cannot be seriously challenged; but, like all power, the right to strike carries great responsibilities, and should not be exercised lightly, nor impulsively. * * *

Recent events point to a general belief in the early possibility of a Labor government, when our party will find itself the guardian and protector of the whole community, rather than the trustees of a section of the people. * * *

What right then, I ask, have we to call upon men and women to attempt to force the hands of the Government by action which could not fail to inflict upon the nation an industrial upheaval which would inevitably involve bloodshed, whilst not necessarily achieving our object when a more simple, less costly and certainly not so dangerous a remedy is within our reach?

After such arguments political action was endorsed by a majority of 2,717,000 "card" votes out of a total of 4,747,000.

The position to-day is that British labor has not merely become political, but that it has deliberately chosen, in days of turmoil and revolution, when Soviet rule and communism are luring the workers of other European countries to anarchy and suffering, to follow the roads of education and discussion to the goal of its aims. While there are more radical elements in British labor than the moderate majority that has made the above choice, they will have little influence in disturbing this choice. The so-called Independent Labor Party is only the left wing of the party. The shop steward movement, the storm center of British trade unionism during the war, will fume against the decision of the special Congress, but three of the leading shop stewards have announced themselves as parliamentary candidates at the next general election, thus contradicting their theories by their practice. In sum, British labor has espoused politics as its helpmate.

While this may mean less general agitation in favor of strikes, it will not necessarily mean fewer strikes. Labor in political power, as Australian experience shows, will have difficulties with its rank and file that Parliamentary institutions cannot cure. But British labor, moderate, cautious, shrewd as it is, will undoubtedly be a more important factor in industry and the State while obeying constitutional methods of procedure than it would be if in open revolt against both industry and the State.

A Novel Setting in Which to Hold Sales Conferences

(Continued from page 775)

trated here. Perhaps a barracks of some kind might replace the tents of Nela Camp, while the general community and outing idea might be worked out in less elaborate fashion.

Nela Park is used for conferences by each of the sixteen sales divisions of the National Lamp Works. Each division holds its conference for a week, all of the conferences usually coming during the months of June, July and August. At other times the camp is used for various purposes, sometimes for conferences or meetings of other Cleveland firms or of associations of one kind or another. The camp is used also occasionally as an outing place for some of the factory employees. During September of this year, for instance, some fifty girls from one of the National factories spent their vacations at Nela Camp. During this time the camp was shut entirely to male visitors and the girls had entire freedom.

As stated previously, the physical surroundings which feature the Nela Park conferences should offer some interesting and valuable suggestions for possible adaption in arranging for sales schools or sales conferences in other manufacturing concerns.

THE National Advisory Committee for Aeronautics recently published translations of two articles from the Technische Berichte of the German Air Service. The first of these deals with "Recent Efforts and Experiments in the Construction of Aviation Engines," and the other one with "Experience with Geared Propeller Drives for Aviation Engines." Engineers specially interested in these lines of work can get copies, we understand, from the office of the National Advisory Committee for Aeronautics, Washington.



The FORUM



Still Another Shop Truck—Study This One

Editor AUTOMOTIVE INDUSTRIES:

It is an undeniable fact that even in those industries which have installed the most approved systems of trucking, there is found a gap, a place for another and different type of truck. There are materials to be moved—perhaps only a small quantity at a time—that do not seem fitted for the two-wheel hand truck or the platform push car, too heavy to be carried but too light for the cranes. The truck shown in the drawing is intended to fill the gap just named.

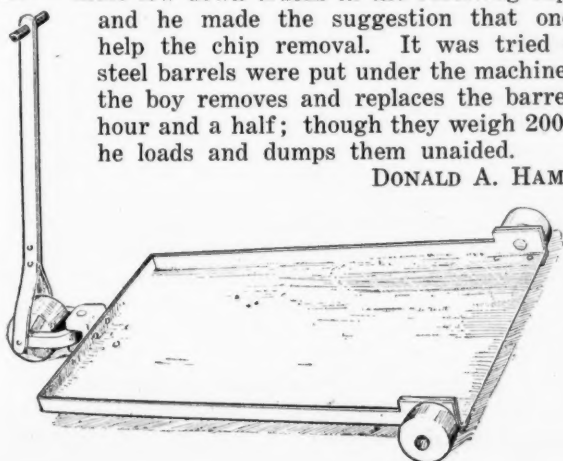
Low down—that is the salient feature of this truck. It has one inch of clearance under the pan, ample for any good floor. The low down feature makes it possible for one man to load heavy boxes or kegs or castings by merely tipping them slightly and then rolling them aboard. If it is desired to load at the rear, the height is only an inch—if at the side, the pan presses down to the floor with a touch of the foot and again the height is only an inch. To get the load off is even easier. The three point suspension balances the load with an even clearance when running—it allows a side of the front to tip for loading or unloading when desired, but the nearness to the floor counteracts any upsetting in transit if the load should shift or from other causes.

Made from a piece of 3/16 in. sheet steel turned up on three sides. With three, 4 in. wheels, and a few simple fixtures, this truck is as cheap and indestructible as any. There are numerous instances where elevating trucks and skids are used, where the number of parts handled is out of proportion to the initial expense and the space occupied, and where a couple of the trucks illustrated would answer better. At the rear corners, the turn-up is reinforced by angles and through the two are riveted the wheel studs. The swiveling front wheel permits turning in a reasonably limited space.

One machine department caught the cast iron chips in bins which the floor boy emptied with his wheel barrow every Saturday, taking the day for the job. He had seen one of these low down trucks in the receiving department

and he made the suggestion that one would help the chip removal. It was tried out and steel barrels were put under the machines. Now the boy removes and replaces the barrels in an hour and a half; though they weigh 200 pounds, he loads and dumps them unaided.

DONALD A. HAMPSON.



Most Economical Driving Speed

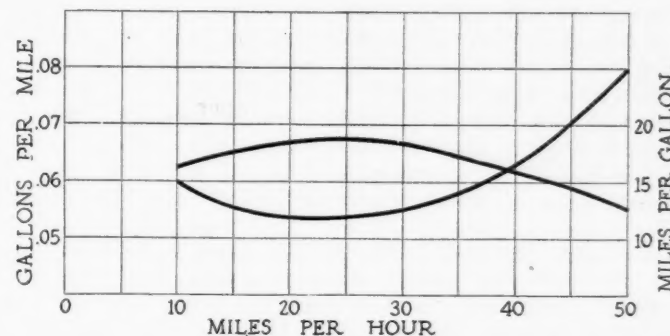
Editor AUTOMOTIVE INDUSTRIES:

IN your issue of Sept. 9 you publish the results of a fuel economy test conducted on a pair of Cadillac cars on the Indianapolis Speedway, and suggest that if any additional data on other cars were available it would be of interest.

We submit herewith the results of one of several tests conducted on a Standard Cole eight-cylinder car, and it is interesting to note that the most economical speed is between 20 and 30 m.p.h.

These tests were conducted upon the highways with the top and windshield up; in fact, with the full equipment, no special effort being made to obtain consumption except such as would be obtained under ordinary driving conditions. It is interesting to observe that the economy is well maintained at speeds as high as 50 m.p.h.

NORTHWAY MOTOR & MFG. CO.,
Div'n General Motors Corp.,
A. A. Bull, Chief Engineer.



Curves of fuel consumption test on Cole 8-cylinder car with Johnson Northway carburetor and standard equipment

Fuel Consumption Test of Cole Eight-Cylinder Car, with Johnson-Northway Carburetor and Standard Equipment

Miles per Hour	10	20	30	40	50
Miles per Gallon, West..	18.7	19.9	18.9	17.5	14
Miles per Gallon, East..	14.4	16.7	16.4	14	11.2
Miles per Gallon, Aver...	16.6	18.3	17.65	15.75	12.6
Gallons per Mile	0.06	0.0545	0.0565	0.0635	0.0793

There was a strong east wind.

Acceleration Test (Car Fully Laden)

Speed	5-20	5-30	5-40	10-50	10-60
Time in Seconds, West.....	6.8	11	16	20.6	28
Time in Seconds, East.....	7.4	12	18	20.9	34
Time in Seconds, Average...	7.1	11.5	17	20.75	31

"Machining Transmission Gears"

IN the article entitled "Improved Method of Machining Transmission Gears" in our issue of Sept. 23, the cut of the Fay automatic lathe was inserted by mistake. The model of this lathe shown is not the one recommended for machining the gears, and, moreover, it is shown doing other work.

Labor Unionists Are Merely Human After All

Industrial organizations compare very well with political and other bodies as to consistent action, and we might possibly get further in our industrial problems if we quit thinking of the cussedness of certain little things and begin to hand out a few constructive thoughts based on more or less study.

By Harry Tipper

WALKING up from the ferry one morning with two or three business men who are neighbors of mine, the conversation turned to the difficulties of doing business at present, and in the course of discussing this the conversation naturally drifted round to the labor question.

One man brought up the argument as to the impossibility of prices going down very far so long as labor secured so much compensation and retained its present efficiency. The other man, who has made more than the ordinary study of the matter, mentioned an article in the *New York Times* regarding the cost of strikes in the building trades. He referred particularly to a dispute which arose between the plumbers' and steamfitters' unions, as to which union belonged the work of installing the heat regulators, which are quite common in many office buildings and hotels to-day. These two unions became so involved in the controversies that they finally struck on the building in order to force a settlement.

He further mentioned the case of the steamfitters' union which decided it was not proper for that union to carry the radiators to their position before putting them into place, and demanded that other help be employed to do that work. After this help had been employed, however, they found they lost too much time and were idle a good deal more, so that they demanded that the other workers be fired and they be allowed to carry the radiators as previously, and they struck to enforce it.

He might have instanced a great many more strikes and difficulties constantly arising out of matters just as trifling and absurd. Anyone who will go into the causes of strikes, particularly local strikes, will be amazed at the number of these strikes which occur on account of difficulties, difference of opinion or grievances which are so insignificant, that they should be adjusted by some other means.

When I asked these gentlemen what were the reasons for such a state of affairs and how it could be remedied, they could only refer to the cussedness of labor, the foolishness of the labor leaders' standpoint, and suggested that we might have to go through sufficient hardship before labor learns its lesson. It is this attitude in connection with the human relations in industry and this lack of study which is the great difficulty. No man who has examined the history of labor disputes but must be impressed with the foolishness of strike orders and actions in connection with many of them.

Every man who examines the matter must admit that strikes are costly and labor union demands are

frequently absurd and unnecessary; but the very fact that these strikes can go on year after year and these costly interruptions occur over such trifling matters is in itself a severe indictment of the management of industry.

Deficiencies in organization of such a costly character, if they related to anything else than the human side, would have been the subject of so much careful study that they would have been eliminated in the course of development in a comparatively few years. On this matter of human relations, the only thing my friend could suggest, and he is more observant than the average, was that we might get sufficient hardship to learn the lesson.

None of these men suggested that it might be possible to learn something by talking with the workers and attempting to find out why they went to so much trouble over such small matters.

No one seemed to think that it might be possible to find out something by studying labor union history or that there must be some reason beyond mere human cussedness for the general lack of interest in their work and the general inefficiency in respect of it.

We have a large bibliography on the cause of strikes, on labor difficulties, on trade unions, democracy in industry, pro and con, showing the numerous difficulties which arise, the expense of time and money wasted in the process of their adjustment, the temporary character of such adjustments, and so forth.

We have brochures and arguments galore to prove that labor unions are a detriment or an advantage, a power for destruction or a power for the common good according to the sympathies of the writer. But the reasons for such a large number of apparently trifling matters causing such great difficulties do not appear to have been considered or any very serious attempt made to find out what they meant. Why should the local steamfitters' union and the plumbers' union on one particular building have such a scrap about a small part of the job? Is it in the least likely that those unions had been friendly heretofore and suddenly became afraid of each other when that matter came up? **Is it not more probable that there was a personal issue in connection with the matter which arose out of a history of the union for a few years, and in respect of which the question of the heat regulators was the last straw.**

Labor unions are no different from any other co-operative bodies governed by committees, referendums, constitutions and so forth. They tend to accumulate a great number of rules and regulations, each rule of which

hardens into a tradition and becomes almost a part of the constitution, something which cannot be disputed.

The leaders have personal differences just as all politicians do, and they arouse their constituents by attempting to show that the matters about which they may differ are detrimental to the constitution and against the traditions of the organization.

It would be interesting to compile a book showing the number of questions on which one politician had charged another with being un-American in his stand. The work would be far too voluminous, however, and it would be useful only to illustrate the insignificance of the differences which had induced so grave a charge. Similarly, it would be interesting to note the number of times that opponents in the labor union councils had been charged as traitors to the union, and had been accused of being poor unionists. That is a grave charge to a labor union man, and it will be found that most of the incidents were just as insignificant as those which arise in the ordinary political circles.

It is just as easy to arouse a group of labor unionists to an enthusiastic demand for action upon the supposed necessity of protecting its rights as it is to produce the same result with a body of citizens upon a community, state or national issue.

There is no particular cussedness about labor unions which does not exist in other organized bodies. The difficulty arises because the labor unions have no industrial responsibility and their leaders have no responsibility for the improvement of industry. Their visible responsibility is confined to the development of the particular craft in which their members are engaged, and the protection of the union's privileges and rights. These privileges may be infringed upon by another union almost as easily as they can be infringed upon by the employer. Disputes have arisen between unions in regard to these privileges and may reach the point where no agreement can be made, with the inevitable result that they refuse to work together.

No benefit can arise out of ignoring these conditions or confining the attention to denunciation of them. They

will not grow better so long as the allegiance of the worker is given to his craft and the privileges of his craft instead of to his establishment and the necessities of that establishment. There is not much hope for improvement so long as the worker is expected to choose his leaders from the ranks of his own craft and they are to be responsible only for the protection of his rights and privileges, without any concomitant obligation for the improvement of industry.

A prominent lawyer friend of mine in addressing a body of business men the other day on a matter of importance to them, in respect of which they were inclined to petition the enactment of laws, pleaded with them to dispose of the matter privately. He pointed out that they might secure laws upon the subject, but they could not control the action of these laws. When the matter has been passed through the unwieldy machinery of the law with its questions of the constitution, its technical points of legal procedure, and so forth, it was likely to harden into a dispute which could not be settled, instead of developing into the common ground for a complete agreement on the matter. Something of the same sort takes place when industrial disputes must be referred to the constitutional requirements, regulations and the technical privileges of the trade union. Once this machinery is set in motion, the final results cannot be foreseen and can only be controlled with difficulty.

The matter develops into a presentation of evidence between attorneys for both sides, whether they be actual lawyers or not, and the dispute has a tendency to harden as it advances. Industrial difficulties are always costly.

They arise out of absurd and insignificant matter very frequently, and the effect of the interruptions and disturbances leads down through the whole ranks of labor to the destruction of any possible co-operation and any possible co-ordination for the final accomplishment of the job. **The dispute between two unions is no more ridiculous than many other disputes between organized bodies of different kinds. The real ridiculous part of the matter is the lack of any study or any concerted and general action looking to the discovery of the reasons and the development of a solution.**

Aero Engines Described and Analyzed

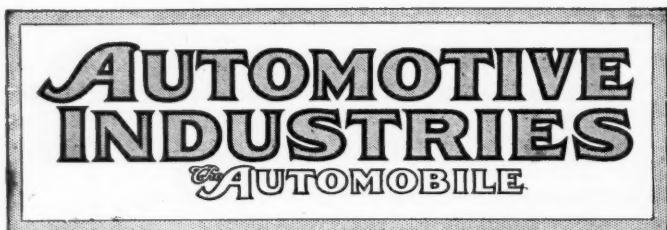
IN view of the rapid development of aircraft and aircraft engines during the war, books on this subject issued prior to the war are now entirely out of date, unless they have been recently revised. The work of the research establishments organized by the Governments of the belligerent countries yielded immense amounts of new data, which it is desirable to get condensed in handy form. Besides, many unusually complete technical descriptions of airplane engines have appeared, which in some cases even include the chemical analyses and physical properties of the materials used in the manufacture of the different parts.

Messrs. Sherbondy and Wardrop, both of whom are well known in the aircraft field, have produced quite a pretentious volume entitled "Text Book of Aero Engines." The book is divided into two parts. The first part of about 100 pages contains a series of essays, mostly of a mathematical character, on the theory of the internal combustion engine. Some of the chapter heads in this part give a good idea of the ground covered: Equation of Condition for Gases; The Behavior of Combustible Gases During Ignition; The Gaseous Mixture; Technical Analysis of the Four Stroke Cycle; The Work Available and Efficiency; Method of Calculating the Power of an Engine; The Power Variables;

Characteristic Performance; Variation of Power with Pressure; Variation of the Power with the Mixture; The Effect of Increasing Compression; Technical Analysis of the Power Required for Flight; The Power and Weight of Aero Engines. Several chapters are also devoted to supercharging apparatus.

The second part, which constitutes about three-fourths of the whole work, consists of detail descriptions of the aircraft engines of different nations. The descriptions have appeared in the periodical press during the past several years. In most cases the description seems to have been transferred directly from the paper to the book. For instance, in regard to the Lancia engine it is stated that "One of the Lancia aeroplane engines has been shipped to Thomas Evarts Adams, Inc., representative in America of the Lancia Company of Turin, Italy." Mr. Adams received delivery of this engine sometime in November, 1917, and it is rather late in the day to print the news of its shipment.

There are a large number of illustrations in the book, and while the half tones are for the most part excellent some of the line cuts are rather faint. Printing and paper are high grade. Frederick A. Stokes Co. is the publisher.



PUBLISHED WEEKLY
Copyright 1920 by The Class Journal Co

Vol. XLIII

October 14, 1920

No. 16

THE CLASS JOURNAL COMPANY

Horace M. Swetland, President
W. I. Ralph, Vice-President E. M. Corey, Treasurer
A. B. Swetland, General Manager
U. P. C. Building, 239 West 39th Street, New York City

BUSINESS DEPARTMENT
Harry Tipper, Manager

EDITORIAL
David Beecroft, Directing Editor
Ray W. Sherman, Executive Editor
Clyde Jennings, Managing Editor
P. M. Heldt

DETROIT OFFICE
J. Edward Schipper

WASHINGTON OFFICE
816 Fifteenth St., N. W.

BRANCH OFFICES
Chicago—Mallers Bldg., 59 East Madison St., Phone Randolph 6960
Detroit—95 Fort Street, West, Phone Main 1351
Cleveland—Guardian Bldg., Phone Main 1142
Philadelphia—Widener Bldg., Phone Locust 342

Cable Address Autoland, New York
Long Distance Telephone 8760 Bryant, New York

United States and Mexico One Year, \$3.00
Extra postage west of the Mississippi River on account of Zone Postage Law, 0.50
Canada One Year, 5.00
Foreign Countries One Year, 6.00

To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order or Register your letter.

Owned by United Publishers Corporation, Address 239 West 39th St., New York; H. M. Swetland, President; Charles G. Phillips, Vice-President; W. H. Taylor, Treasurer; A. C. Pearson, Secretary.

Entered as second-class matter Jan. 2, 1903, at the post-office at New York, New York, under the Act of March 3, 1879.

Member of Associated Business Papers, Inc.

Member of the Audit Bureau of Circulations.

Automotive Industries—The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907, and The Horseless Age (semi-monthly) May, 1918.

Ghosts

CHANGING conditions may alter the importance of various phases of manufacture, but certain proportions between those phases remain constant in a general way. When prices of automotive products were rising, the manufacturer was prone to lay much of the blame for his increased selling price upon the advanced wages and decreased efficiency of labor. There was undoubtedly a large measure of justification for this view.

Since so much emphasis has been laid upon this phase of manufacturing expense in relation to high prices, however, manufacturers must meet changing conditions squarely. To the workman who has followed the manufacturer's reasoning during the last four years, the statement made by an executive of an automobile concern recently must have a peculiar ring. This executive, commenting upon the possibilities of lower automobile prices after a conference of manufacturers in Detroit, is quoted as saying:

"While labor efficiency has increased greatly within the last few months, labor is a comparatively small part going into the manufacture of automobiles."

This particular executive may not have been making an inconsistent statement. But the majority of manufacturers could not make it, without contradicting to some extent what they have said during the last few years, namely, that high prices were to a very large extent due to the increased cost of labor.

Politicians are constantly being haunted by the ghosts of past utterances. They frequently have to learn by experience that a statement made to gain temporary justification may arise to mock them later when they try to gain temporary justification again by a contradictory statement. Professional politicians sometimes do things that the alert business man knows to be poor policy in the long run.

French Automobile Taxation

ONE of the causes to which the recent stagnation in the French automobile trade is attributed is the heavy taxation to which owners are subject. American motorists in the past have repeatedly protested against what they termed "double" taxation, but the term "double" falls far short of adequately describing the manner in which the tax screws are being applied to automobile owners in France. American manufacturers are more or less interested in this matter, for if the automobile trade in France is killed by taxation it closes to us one of our otherwise promising export fields.

The French Government still regards private passenger vehicles as articles of luxury and applies to them the luxury sales tax of 10 per cent. This tax, moreover, is payable not only when a car is first sold, but every time it is resold, and this is bound to put a considerable crimp into the custom of certain classes of buying a new car every year or two and getting rid of the old one either by direct resale or by trading it in.

Next come the annual taxes. These are graded according to three factors, namely, the population of the city or town in which the owner lives, the seating capacity of the car and its horsepower. There are three separate schedules and the taxes according to the different schedules add together. According to what we may call Schedule A, two-passenger cars pay 100 francs per year in Paris and 80 francs elsewhere, unless they happen to be of less than 12 hp., in which case they pay still less in places of less than 40,000 inhabitants. Four-passenger cars pay 180 francs in Paris and 150 francs elsewhere.

Schedule B hits the powerful cars. According to it there must be paid an annual tax of 15 francs per horsepower for each of the first twelve; 21 francs for each horsepower from the thirteenth to the twenty-fourth; 27 francs for each horsepower from the twenty-fifth to the thirty-sixth; 36 francs for each horsepower from the thirty-seventh to the sixtieth, and 45 francs for each horsepower over this.

After an automobile owner has paid the above three taxes (purchase tax, seating capacity tax and horsepower tax) he still has no right to take his car

out on the public roads. For that he needs a *permis de circulation*, which may be translated as a road permit—one for each vehicle owned. Roads cause heavy upkeep expense; and so the road permit could not be expected for a merely nominal fee. Here is what the French owners of cars of different powers are compelled to pay once a year: Up to 12 hp., 100 francs; 13-24 hp., 200 francs; 25-36 hp., 300 francs; 37-60 hp., 400 francs; 61 hp and over, 500 francs.

All the above taxes go into the national treasury. But the departmental and communal governments cannot be run without adequate income, and practically their only source of income is taxation. The French Parliament has nicely taken care of the departmental needs by simply voting a "majoration" of 25 per cent on Schedules A and B above, the receipts from which are put into a common fund which is divided among the departments.

There still remain the communes or towns. These formerly had the right to collect octroi taxes on all kinds of merchandise entering their gates, but by a law passed in 1897, they are empowered to impose a direct tax on automobiles taking the place of the octroi duty. Under the new law this local tax must not exceed 50 per cent of the national tax, except in certain cases which it is unnecessary to specify here.

The above covers all of the direct taxes to which an automobile owner is subject, and there remain only the indirect taxes, which, however, are far from negligible. Up to the time the new tax law was adopted (June 25, 1920) the French Government collected an import duty of 10 francs per hectoliter on gasoline. In addition to this the new law imposes a consumption tax of 20 francs per hectoliter. Then, gasoline is still subject to octroi duties, which in the case of the city of Paris amount to 20 francs per hectoliter. This makes the total tax on gasoline 50 francs per hectoliter or 36 cents per U. S. gallon (nominal rate of exchange).

It will be noted from the above that the taxes are especially heavy on piston displacement, and this counts against American cars in France. The smallest tax class is that of 12 hp. and under, and all American cars fall in one of the higher classes. The Ford car, for instance, is rated at 15 hp. by the French authorities, and how this affects the tax is well shown by a comparison made by one of our French contemporaries, which calculates that on the basis of a daily mileage of 31 and a fuel consumption corresponding to the two cases, a small 10 hp. four-passenger car would pay annual taxes, direct and indirect, of 1,950 francs, as compared with 2,750 francs for the Ford. Four years ago this latter sum was considerably more than we paid for a Ford in this country.

The Engineer in Military Work

THE Military Affairs Committee of the Engineering Council has been wrestling with the problem of a report on a plan to better the "Relations of the Engineers to the Future Military Activities of the United States." A report has been filed by this committee of which William B. Parsons is chairman. In short the plan is this:

That industrial companies should employ for a period the engineers who have gained rank in military service. This would permit these engineers to be replaced in military service by juniors or industrial engineers drawn from the reserve. It is considered likely that some of the military engineers would prefer to remain in industrial service and their places would be filled permanently.

The object of this plan is to permit a greater number of industrial and junior engineers to obtain an education in military affairs and for the military engineers to get an inkling of industrial service. At the bottom of this idea is the fact that a great war-time engineer should be trained in both industrial and military engineering.

This plan presumes, as it should, that all engineers will be available for military work in case of need.

Just Common Sense

IT usually develops that the simple method of solving a problem is the best. Reduce the question, however involved it may be, to a simple form before endeavoring to obtain the answer. Recently we have heard not a little about foreign exchange, and a conference called to consider this question. Now comes the report of the meeting. We quote the report as given out by The Associated Press:

"The necessity for countries in financial distress to get to work, to live on their own activities and to pay their own way, and to produce more and spend less, were principal remedies proposed as means of putting health into current situation and stabilizing exchange at this morning's session of International Financial Conference."

Perhaps you are disappointed. Perhaps you thought that an International Financial Conference would immediately point out the way for raising the value of marks. But these financiers were big enough to know that the fundamental value must be behind the money offered for exchange. It is not a question of manipulation, but a question of common sense. Charles Ponzi had a different method, but something happened to it. Nothing will happen to the solution offered above.

IT is to be hoped that the N. A. C. C. will quickly follow its recent export managers' meeting with further gatherings. In its present status, export trade cannot be handled as some other topics, with annual or semi-annual meetings. It is a subject of acute interest and importance. At this moment the worldwide buying hesitancy offers an opportunity for study and preparation to ride high with the next trade tide. These meetings should treat directly with the human interest in the subject in such a way as to attract the sales executives of all factories. The great interest shown in such talks at the recent gathering—much greater than that given to the talks on basic or routine topics—indicates wherein the interest lies. It appears that the need is to sell the big idea, and then the export manager will himself master the routine, such as tariffs, credits, etc.

Normal Business Expected Soon

Manufacturers See End of Dull Times

Optimism Prevails at Show Drawing Meeting—January to Be Turning Point

NEW YORK, Oct. 9—Confident optimism as to the future of the automotive industry was displayed by executives of 103 passenger car and truck manufacturing companies who attended the quarterly members' meeting of the National Automobile Chamber of Commerce, prior to the drawings for space in the New York and Chicago shows. It was generally conceded, however, that there is likely to be a further sharp decline in business for the next three months.

Conditions are expected to improve rapidly after the first of the year and it is believed there will be a marked turn for the better in automobile sales in the early spring, following the shows which are arousing more interest this year than ever before. Business in the industry will be dependent largely upon general industrial and commercial conditions, but it is regarded as virtually certain that the situation will be largely stabilized by that time.

Manufacturers looked the future squarely in the face and made no attempt to minimize the depression which has cut a sizable hole in their earnings. They recall other slumps in the automobile business, however, and point out that they were of short duration. The years most of them mention are 1907, 1917 and 1919. The manufacturers know there is no shortage of money in the country, and they know equally well that there has been no permanent elimination of the universal and deep-seated desire to own motor cars.

Price Cuts Engage Attention

The members of the N. A. C. C. discussed trade conditions in general, but the major part of the debate was devoted to the consideration of price cuts. The opponents of reduction outnumbered those who have lowered their prices. Each camp appeared to be firmly intrenched. The majority of those who were opposed to cuts at this time contended that it would be ruinous for them to make reductions with their present large and unbalanced inventories, much of which were purchased when prices were at the peak.

The advocates of lower prices argued, on the other hand, that it would be better to cut now and work up these expensive inventories at a comparatively small loss

than to wait until there was a still further shrinkage in the value of materials with a larger loss of sales resistance continued against lines which showed no disposition to lower the price.

Outside the meeting some of the members did not hesitate to point to the immutable economic law of supply and demand. They asserted the automotive industry did not differ from any other line of manufacture and that if car makers wished to break down the barrier set up by the great mass of consumers against what they consider exorbitant prices, they must yield to the insistent demand for a return to conditions more nearly normal. There was no attempt to deny the indisputable fact that automobile prices have not risen to the height attained by other commodities, but it was contended this statement would have little effect upon the attitude of the buying public.

Small Cuts No Stimulus

Those who have steadfastly refused to lower the price of their product declared personal investigations made by their representatives in sales centers showed that while there had been an undoubted stimulus in the sales of Ford and Franklin cars, on which substantial cuts were made, there had been no rush to the salesrooms of dealers handling lines which had been lowered in price only \$200 or \$300. They argued that unless there was a material reduction in prices there might as well be none, because prospective purchasers had convinced themselves that a rapidly falling market has arrived and further reductions must be made. It was generally considered that purse strings would not be loosened until prospects were certain that prices had been stabilized.

In this connection there was considerable discussion among the members of the policy of guaranteeing purchasers against loss by price reductions. This is the course which has been followed by the General Motors Corp. on all its lines and to which President W. C. Durant has announced he will adhere. The Federal Trade Commission looks askance upon price guarantees, taking the position that they intend to keep prices at their present high level. Some of the automobile men in the meeting were inclined to think these guarantees might result in a feeling of animosity towards the industry on the part of some persons. The majority believed, however, that guarantees would do more than price cuts to stabilize the industry at this time and there was a strong feeling that stabilization never was needed more than now.

(Continued on page 794)

Price Cuts Reach Intermittent Stage

Stanley and Liberty Lower Car Rates—Selden and Standard Cut Trucks

NEW YORK, Oct. 11—The fever for price reductions on both passenger cars and trucks now has become intermittent. Manufacturers who have not cut apparently are waiting to see what will happen in the hope that the industry may be stabilized so they will not have to make reductions. They want to work up their expensive inventories with as little loss as possible.

The Selden Motor Vehicle Co. announces reductions ranging from \$100 to \$170 on its trucks. The 1½-ton model has been reduced from \$2,460 to \$2,360. The largest cut is on the 5-ton truck which is reduced from \$5,770 to \$5,600. President G. C. Gordon said the present cost of materials and labor does not justify reductions in prices, from an economic viewpoint, but that "the buying public demands lower prices regardless of what sacrifices the manufacturers are obliged to make."

Sharp cuts have been made in the price of Stanley steamers. The touring car is reduced from \$5,150 to \$4,000; the coupé from \$6,875 to \$5,950 and the sedan from \$7,000 to \$6,100.

Liberty Motor Car Co. announces price reductions on all models effective immediately. The touring car and runabout which have been selling at \$1,985 have been reduced to \$1,795. There is but slight reduction in the closed models and the four-passenger speedster, the latter quoted now at \$1,885, the coupé at \$2,825 and the sedan at \$2,850.

Standard Not Philanthropist

Standard Motor Truck Co. also announces price reductions on its four models, the statement containing the announcement declaring the company "does not wish to appear a philanthropist but simply desires to assist in the country-wide movement to reduce prices." The new prices follow: One-ton model, \$2,250, reduced from \$2,475; 2½-ton, \$3,100, from \$3,520; 3½-ton, \$4,000, from \$4,410, and 5-ton, \$4,800, from \$5,250.

Denby Truck Co. in a letter to distributors announces there will be no change in price before Jan. 1, the company guaranteeing to protect distributors and buyers against a reduction prior to that date.

Continuance of list prices was announced by Cole and Templar. J. E. Roberts, general sales manager of Cole, (Continued on page 790)

September Shipments Show Growth

Business for Month Exceeds 1919 Period

Indications Are Early 1920 Prosperity Will More Than Counterbalance Late Depression

NEW YORK, Oct. 14—Reports to the traffic department of the National Automobile Chamber of Commerce, which were read to the directors and members at their meetings here this week, disclosed that in spite of the depression which has caused heavy curtailment of production, shipments for September were larger than for the same month last year. Under the circumstances this was considered a remarkable showing and was taken as evidence that when profits are added up to the year they will reach very respectable proportions.

Reports covering most of the shipments for September showed that they totaled 87 per cent of the carloads shipped in August. Driveaways were 74 per cent and boat shipments 75 per cent of the August record. This indicates that complete reports from all factories should show shipments of 20,000 carloads, 23,500 driveaways and 5340 cars shipped by boat. The total of shipments is larger than in September of last year. There were fewer carloads but the driveaways and boat shipments more than made up the difference.

Gasoline was discussed at length and reports showed that the situation is satisfactory, although on July 31 the reserves were down to 25 days' supply compared with 27 days' supply when the gasless Sundays were put into effect during the war. Oil from Mexico is coming at the annual rate of 100,000,000 barrels, or twice as much as last year. Crude production is now breaking all records, running at the rate of 575,000,000 barrels a year, as compared with 377,000,000 barrels last year.

Exports Have Slight Effect

Oil men insist exports are having little effect because more gasoline is being brought in in crude oil than is being sent out of the country. The mid summer survey of 80 samples showed the quality poorer than usual and the N. A. C. C. will insist on a better quality for winter. A number of oil companies have expressed disappointment over the comparative falling off in the use of gasoline during July and August.

The increase in car thefts has caused grave concern because of the rapid increase in insurance rates. As a consequence the N. A. C. C. has prepared, from suggestions received, a manufacturer's certificate of sale which would make it much more difficult for stolen

HIGH STEEL COSTS TO SUSTAIN PRICES

YOUNGSTOWN, OHIO, Oct. 11—Steel production costs in the past month were the highest in the history of the industry, says J. A. Campbell, president of the Youngstown Sheet & Tube, one of the largest of the independents. Railroad buying in the immediate future means a heavy demand for plates, shapes and bars. Slight but general advances by the United States Steel Corporation all along the line are either in force or anticipated.

This situation, in the opinion of Mahoning and Shenango valley steel men, makes the probability of lower prices to automobile businesses very faint. There may be some shaving of peak premium quotations of some manufacturers who were in the market with special lines or who were supplying manufacturers who were in extreme need.

Steel production in the valley is virtually at capacity, while current new business is 50 or 60 per cent of the shipments. The unfilled tonnage of merchant bars is still enormous. The only weak spot in the valley markets is the plate demand. This production is such, however, that softening of price is not expected.

cars to be sold. The chamber is opposed to any measure which is so complicated or requires such heavy fees that it would interfere with the free sale of cars.

The insurance committee has suggested to the underwriters many modifications of their schedule and it is expected they will be sent out soon, covering both passenger cars and trucks. Special efforts will be made to agree on a standard method of marking frames and engines for identification. It is proposed that cars using such marks should have a discount of 20 per cent in theft rates.

Rules Out Retail Price Tax

In a report on the tax question it was announced that the Commissioner of Internal Revenue has ruled against the recommendation of certain inspectors which would have required manufacturers to pay a sales tax on the retail instead of the wholesale prices of their product. Tax officials at Washington have virtually agreed that motor vehicles shall be put in the transportation section and removed from association with jewelry, sporting goods, and face powder.

Monthly Comparison Discloses Decrease

Output 11,023 Under August—Ford Increase Conceals Actual Drop of 5000 More

DETROIT, Oct. 9—Production in the Detroit district took another decided slump in September both in passenger cars and trucks and a still further decrease in October is expected.

Passenger car production in September was 139,290, as against 150,313 in August, a falling off of 11,023. This, however, does not reveal the real condition because of the fact that Ford's production in September was 5083 greater than in August. Eliminating Ford, the production decrease was 16,106 of the total, approximately 10 per cent. July and August production was about 35 per cent below normal, the figures making the September output about 45 per cent below the schedules outlined at the beginning of the year.

There were only 14,369 trucks manufactured in thirty-two plants included in Detroit and Michigan territory, of which total Ford produced approximately 10,000.

E. A. Nelson Motor Car Co. and Maxwell-Chalmers plants still are out of production though some cars were finished in the latter plants in September on chassis built before the plants were shut down pending reorganization. Lincoln Motor Co. is just swinging into production on the new car and the same is true of the new Packard single six. Buick production took a jump in September, the apparent slump in Buick production in August being due to the change from the old to the new model.

Cadillac, Hupp and Reo moved along at about normal schedules, but in the majority of the other plants the decrease was heavy, ranging from 15 to 40 per cent over the figures for August. Hudson-Essex production dwindled steadily throughout the month, the decrease in output in those plants reflecting the company's determination to conform insofar as possible to the suggestion of officials of the National Automobile Dealers Association and the N. A. C. C. to confine production to demand.

MYERS GETS FOREIGN PATENTS

NEW YORK, Oct. 11—Patents have been issued to Cornelius T. Myers in France, Belgium and Italy on his magazine oiling system for chassis which is being used in this country on class "B," Fageol, Diamond T, Ward, LaFrance, Service and Bethlehem. The European licensing arrangements will be handled by Hart O. Berg of Paris.

Car Excise Tax Grows \$85,620,382

Reflects Big Leap in Year's Production

Industry Ranks Third in Percentage of Increased Returns—Income Tax Increases

WASHINGTON, Oct. 11—Preliminary statements relating to the collection of internal revenue for the fiscal year of 1920 as given out to-day show that the automobile industry paid \$144,494,448.79 in excess taxes. A statistical study of the Government receipts reflects the remarkable growth of the industry in the twelve months, for the taxes on passenger automobiles and motorcycles were \$58,874,066.11 in excess of last year's tribute to the Government.

The manufacturers' excise tax on motor cars and motorcycles for the fiscal year ended June 30, 1920, amounted to \$76,789,576.92 as compared with \$17,915,510.81 for 1919. The same impressive gains are noted on other lines in the trade. The collections obtained from an excise tax on motor trucks, etc., which are classified as automobile trucks and automobile wagons, increased by \$12,577,403.83. The receipts from a levy on this equipment amounted to \$14,511,626.34 as against \$1,934,222.51 in 1919. Tires, parts or accessories for automobiles netted the Government \$53,193,245.53. This figure represents a gain of \$48,284,869.35.

It is a noteworthy fact that the automobile industry ranked third in the percentage of increased returns. The collections from a tax on the value of capital stock in corporations yielded \$64,254,513.09 more than last year, while the return on small cigarettes increased \$60,785,674.88 over 1919. Receipts from passenger cars and motorcycles taxes were next.

Income and Profits Big Factor

The income and profits taxes amounted to \$3,957,699,870.70, or 73.2 per cent of the total collections from all sources. Receipts aggregated \$5,408,075,468, but attention has been called to the fact this amount includes payments of the third and fourth instalments of 1918 and of the first and second instalments of 1919 taxes in addition to assessments. The collections on income and profits taxes increased \$201,007,917.42. It costs the Government 55 cents to collect every hundred dollars, or an increase of two cents over collection costs of last year. The advance, it is explained, is due principally to the expense incurred in the enforcement of prohibition laws.

Passenger automobiles for hire contributed \$2,043,920.19 in excise taxes, a gain of \$1,536,199.18 over 1919.

Truck Makers Think Depression Short-lived

CHICAGO, Oct. 5—Eighty-five per cent of the membership of the Motor Truck Manufacturers' Association met in convention here to-day to discuss some of the vital problems now confronting them. The opinion prevailed among the members that the present period of depression was to be of short duration, and that the future of the motor truck industry was most promising.

Among the subjects that received consideration was the one of price reduction. The opinions were varied. That the prices of all commodities were on the decline was, of course, generally accepted and every manufacturer present was most anxious to do everything possible and reasonable to make the price of his product conform with the general tendency, which appears to be the disposition of all interested in the motor truck industry.

The prices of units and materials which go into the making of trucks with the exception of a reduction on the part of a few parts manufacturers remain the same and labor cost has not decreased. Nevertheless, the motor truck manufacturers are determined to do everything that is reasonably possible and consistent to reduce, whenever they can, the price of their commodity.

Ford Company Wins in Spot-Welding Suit

DETROIT, Oct. 11—Judge J. M. Killits of Toledo, sitting in the Federal Court here, has dismissed on all points an action brought against the Ford Motor Co. by the Thompson Spot Welding Co., which charged that the patent rights held by it were being infringed by the use of the Winfield spot welding machine in the Ford plant. The action established the legality of millions of dollars' worth of welding equipment used by more than 500 industrial concerns.

An opinion handed down by Judge Killits found invalid patent No. 1,046,066, issued on a spot welding device invented by John Harmatta and manufactured by the Thompson company with headquarters at Lynn, Mass. The Circuit Court of Appeals at Boston recently upheld the patent.

FIRE BURNS BATTERY PLANT

GARY, IND., Oct. 9—Fire destroyed the main factory and office buildings of the O. K. Giant Battery Co., causing an estimated loss of \$100,000. Flames from a "dope pot" spread to acetylene tanks, which exploded and blew large holes in the buildings.

All Space Assigned for National Shows

Eighty-seven Cars Arrange New York Showing—Eighty in Chicago List

NEW YORK, Oct. 9—The space drawing for the New York and Chicago shows was held this afternoon in the members room at the headquarters of the N. A. C. C. A spirit of optimism and aggressiveness marked the session, the manufacturers taking a keen interest in the space selections and expressing their belief that the winter's shows will mark the beginning of big business.

As was usual, the drawing was in the order arranged by the N. A. C. C. Every one was accommodated with space of some sort at the New York show in Grand Central Palace, but some non-members were unable to get into the Coliseum and Annex or Armory at the Chicago exposition because of lack of space. The accessory space is allotted mostly to the M. A. M. A., which states that its members have spoken for all of its portion.

The number of cars which secured space was: New York, 87; Chicago, 80. The result of the drawing follows:

Note: In Chicago letter X after space means Coliseum or Annex; letter Y means Armory. In New York Show the A spaces are on first floor, B spaces on second, C on third and D on fourth. "Not" means "not showing" or "space not available."
*Means "not member of N. A. C. C."

New York		Chicago
Space	Car Name	Space
A-19	Buick	C-5-X
A-11	Dodge	D-1-X
A-20	Overland	A-6-X
A-12	Chevrolet	B-6-X
A-15	Studebaker	B-2-X
A-17	Cadillac	D-5-X
A-13	Hudson	D-3-X
A-14	Maxwell	A-2-X
A-30	Oakland	C-6-X
A-26	Nash	A-4-X
A-16	Chandler	B-4-X
A-3	Oldsmobile	D-6-X
A-4	Franklin	C-3-X
A-5	Packard	D-2-X
A-31	Paige	C-1-X
A-27	Hupmobile	D-4-X
A-10	Dort	A-1-X
A-21	Cole	C-2-X
A-7	Chalmers	A-3-X
A-32	Pierce-Arrow	C-4-X
A-22	Reo	B-5-X
A-23	Marmon	B-3-X
A-2	Peerless	E-2-X
A-25	Mitchell	K-1-X
A-24	Cleveland	A-5-X
B-27	Stephens	H-2-X
A-9	Vellie	F-4-X
A-8	Scripps-Booth	F-5-X
A-18	Lexington	F-3-X

(Continued on page 796)

Conditions Abroad Parallel U. S.

Citroen Cuts Price to Stimulate Trade

Reductions Effective if Sufficient
Orders Develop in Fifteen
Days—Fiat Resumes

(By Cable to AUTOMOTIVE INDUSTRIES)

PARIS, Oct. 11—Citroen, manufacturer of the lowest priced motor cars made in France, has countered the price cuts of Henry Ford by announcing a decrease of 20 per cent in his open models and 25 per cent in closed cars. He declares these cuts will not go into effect unless sufficient orders to warrant them are received within the next fifteen days. Persons who place orders in this period will not be called upon to buy unless the lower prices are put in effect. It is the prevailing impression that the decrease will be maintained regardless of the number of orders received.

Conditions are duller than ever in the French motor car market since announcement of a 20 per cent reduction in iron and steel prices. The public is convinced there will be a corresponding decline in automobile prices and is refraining from buying for that reason.

Berliet has completed re-tooling part of his factory for the repair of railroad material. He will manufacture railroad car platforms and light locomotives. Automobile work will be continued but the factory production will be cut. The Berliet 15 hp. car is about to be withdrawn and will be replaced with a 16 hp. model.

Renault has ordered work stopped on the new factory which is being erected at Le Mans.

The French tractor trials close this week. The amount of business done was small and no manufacturer claims to have sold more than 3 tractors on the field.

Fiat Production Resumes

The Fiat factory in Italy resumed work this week on the basis of the agreement signed in Rome which gave the workers a share in the management. Production is not more than 20 cars a day. It is believed President Agnelli and his chief engineer will retire from the company. The situation in Italy still is far from clear. A governmental statement says the new arrangement gives the workers control of the internal organization of the shops and the extremist element among the employees make no secret of the fact that they consider this merely a step toward communism and that the real fight remains to be decided. A break is probable between the trades unions and the extreme Socialist organizations.

A Labor Council has been formed which is composed of 150 members, half of whom are workers and half masters. The organization has legislative powers.

The Allied Technical Commission in Germany announces that all German airplane material has been delivered or destroyed under the peace treaty. Only the ground organizations remain to be destroyed. Three months after the delivery of material the airplane industry will be allowed to manufacture. This date probably will be May, 1921.

Italy Increases Tax on Car Importations

WASHINGTON, Oct. 9—The following notice of automobile tariff changes in Italy has been reported to the Bureau of Foreign and Domestic Commerce by Trade Commissioner H. C. MacLean at Rome:

"To equalize the present disparity between the low Italian duties on motor vehicles and the high duties which France, Great Britain, and the United States impose on these vehicles, the Italian Government has just decreed radical increases in the present rates.

"Effective Sept. 15, 1920, passenger automobiles, with or without bodies, trucks, traction engines, including farm tractors, motor-driven street-cleaning apparatus, and motor fire engines will pay the following duty in gold per quintal:

	Lire.
Weighing not more than 400 kilos.....	20
Over 400 kilos up to and including 900 kilos	115
Over 900 kilos up to and including 1,600 kilos	65
Over 1,600 kilos up to and including 2,500 kilos	75
Over 2,500 kilos up to and including 4,000 kilos	95
Over 4,000 kilos.....	60

"Automobiles, with or without bodies, weighing not more than 2500 kilos will pay also a surtax of 35 per cent ad valorem.

"Automobile bodies will be classified as automobiles. On automobile parts the following new duties, gold per quintal, will be established:

"On frames, 70 lire; gear shifts, 110 lire; rear axles, complete, 90 lire; all plus a surtax of 30 per cent ad valorem.

"The restrictions on the importation of automobiles have been continued largely on account of the inadequacy of the old duties."

ELGIN GETS EXPORT ORDER

CHICAGO, Oct. 9—An order for approximately \$1,500,000 worth of passenger cars for exportation to various countries of Europe has been received by the Elgin Motor Car Corp. from Gaston, Williams & Wigmore of New York.

Makers Discouraged With Turn of Events

Not Back on Peace Production
When Price Reductions Begin
—Fear U. S. Competition

LONDON, Oct. 7 (Special to AUTOMOTIVE INDUSTRIES)—The course of the automotive industry is running a remarkable parallel in the United States, England and France. General industrial conditions in all three countries are almost identical and the process of readjustment which is now under way in America has brought the same depression here and in France. Its ramifications are world wide and they show that all nations are striving to return to a normal basis after the inflation resulting from the war.

While in their broad aspects conditions here are the same as those in the United States, this country is in a more serious plight because labor is entrenched to a greater degree and as a consequence manufacturers are more at its mercy. Trades unions are able to enforce their demands no matter what the effect may be upon their employers. England probably is nearer to a revolution to-day than the United States ever will be. "Revolution" in the sense in which it is used here does not mean communism but a labor government. The British never will accept Bolshevism and the labor leaders of England are men of broad vision.

Automobile manufacturers both in England and France are thoroughly discouraged. It was difficult for them to get from a war to a peace basis and they never really have gotten into their stride, as it were. Now they are confronted with the bogey of lower prices for American cars which they fear will necessitate a still further curtailment of production.

Public Declines to Buy

Sales resistance here and in France, as well as in the United States, is the result of the determination of the public not to buy anything except absolute essentials until prices come down. The orgy of extravagance which followed the war ended some months ago.

Motor car sales have virtually ceased and even Fords, the last to be affected, have suddenly become almost dead because of cables reporting price reductions to pre-war levels in the United States. Everyone takes it that this means pre-war prices here very quickly. The papers are carrying every day paragraphs about cuts in the prices of American passenger cars and trucks.

(Continued on page 795)

Industry's Finances Give Encouragement

Companies on Crippled List Promised New Support—No New Difficulties Reported

NEW YORK, Oct. 11—Attention of the automotive industry has been focused on price cuts for the past fortnight almost to the exclusion of the general financial situation. The industry has not suffered because of this fact, however, for conditions are distinctly encouraging. No additional companies of consequence have come under the suspicion of the ever watchful and cautious credit men.

In view of the widespread curtailment of demand and production, not only in the automobile field but in almost every line of manufacture, this is a decidedly auspicious augury. This list of cripples is not large and developments with most of them are encouraging.

The Federal court has refused to find the William Small Co. insolvent and the Federal receiver has been supplanted by one appointed in an Indiana state court. It is intimated that a widely known American manufacturer will invest a large sum in the company, and even if this is not done, there is reason to believe efficient management will put the Monroe makers back on their feet.

Negotiations now pending are expected to pull the Spacke Tool & Machine Co. out of its present difficulties. The assets greatly exceed the liabilities.

A new plan for re-financing the Standard Parts Co. has been adopted by the various committees appointed by Federal Judge Westenhaver and the lifting of the receivership is expected to be only a question of a short time.

The position of the Bethlehem Motors Corp. is not as satisfactory as might be wished, but its affairs are not by any means in a hopeless muddle.

Reorganization of the Allen Motor Co. is progressing rapidly and its future is brighter than even its staunchest supporters might have hoped.

Except for one comparatively small passenger car company these are the most important automotive corporations in financial difficulties at this time.

Libelous Reports Continue

There has been no cessation, however, of the false, misleading and even libelous reports circulated in the financial quarters of this and other cities about receiverships, actual and pending, for passenger car and truck companies. There is little doubt these rumors are started deliberately by professional stock market traders in the hope of depressing prices so they can make profitable short sales. The most recent example was the raid late last week on Packard. This stock sold off several points before President Macauley had opportunity to spike reports of financial troubles and point out the strong position of the company.

The National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers Association, the two strongest organizations in the industry, have warned their members against scandal mongers and the serious mischief caused by the repetition of slanders at this ticklish time.

Money is not yet plentiful by any means but it is easier than it was and it is likely to continue so, although there may be an occasional tightening. The Federal Reserve Board has recognized the added strain on manufacturers during the period of price readjustments on a falling market and will see that no solvent company is allowed to fail because of the damming up of its credit reservoir at a time when it is working up an expensive inventory after a cut to the consumer. Establishment of a lower general price level and deflation has been the principal aim of the Federal Reserve system for the past six months and when it is well under way it will not desert those who are fostering it.

Progress on Readjustment

Substantial progress is being made in the difficult process of readjustment. It is coming in a quiet and orderly way. The danger of an economic collapse apparently is past although there is likely to be a much greater curtailment of production during the winter and a corresponding increase in unemployment. There is no possibility of a bank panic.

Price Cuts Reach Intermittent Stage

(Continued from page 786)

said reductions in price at this time would be contrary to its basic program of building a car that at all times represents the highest value possible at the price. The company would not hesitate to advance its price, he said, if by so doing it could add to its refinement or efficiency.

Harry W. Anderson, sales manager for Templar, said to reduce prices without regard to conditions prevailing, simply because someone else has cut them, would be as uncertain of permanently good results as it is most certainly unwise business and unjust to both workers and stockholders.

The Agricultural Equipment Corp. has reduced the price of Sandusky tractors. The model J which sold at \$1,650 has been cut to \$1,250 and the model E from \$2,500 to \$1,750.

The J. I. Case Threshing Machine Co. asserts that the Ford cut cannot affect its policy. "In view of the continued high costs," it says, "we cannot lower the price and maintain quality and we are guaranteeing against any reduction until July 1.

Columbia Motors Co. has reduced prices \$200 on its touring car and \$100 on all other models, effective at once. Prices now are: Touring, \$1,795; sport, \$1,945; roadster, \$1,945; sedan, \$2,895; coupé, \$2,895. Gramm-Bernstein has cut truck prices from \$200 on its Model 15, 1½-ton truck to \$600 on Model 50, 5-ton.

Virginia to Decide Huge Road Program

Would Change Constitution to Raise \$40,000,000 for Imme- diate Highway Use

RICHMOND, VA., Oct. 9—The citizens of Virginia will vote on Nov. 2 on the most far-reaching question touching good roads that has ever been presented to the people of this Commonwealth—an amendment to the State constitution allowing the sale of State bonds for road building. If the amendment is adopted at the polls, plans are being laid to call a special session of the General Assembly of Virginia this winter for the purpose of authorizing an issue of \$40,000,000 of road bonds for immediate work.

The present constitution of the State, adopted in 1902, reads in Section 184: "No debt shall be contracted by the State except to meet casual deficits in the revenue, to redeem a previous liability of the State, to suppress insurrection, repel invasion, or defend the State in time of war."

It is proposed to strike out that clause and insert in lieu thereof:

"Section 184. No debt shall be contracted by the State except to construct or reconstruct public roads, to meet casual deficits in the revenue, to redeem a previous liability of the State, to suppress insurrection, repel invasion, or defend the State in time of war."

Virginia refused to repudiate its pre-civil war debts as did other southern states, but has proudly shouldered the burden, only last month completing the negotiations by which West Virginia finally assumed responsibility for the portion assigned as her share in the division into two states. For years, however, the prohibition against issuing bonds for internal improvements has been avoided by the issue of road bonds in the cities, counties or magisterial districts, and the last Legislature authorized the State Library Board to issue \$2,000,000 of State guaranteed bonds to erect a war memorial. The State has also guaranteed the bonds of the University of Virginia and other educational institutions.

Fear Squandering of Fund

There is some opposition to the constitutional change, on the ground that it does not require the proceeds of a State road bond issue to be expended on roads within the State highway system. Some State officials go so far as to describe it as an attempt to "loot the treasury" and assert that of the proposed \$40,000,000, the greater part will be diverted to local and county roads of no general importance, and when the whole has been expended, the highway system will still be far from completion. Every country legislator, it is predicted, will want a road leading to his house, and every county supervisor will build at State expense a road to his grist mill.

Parts Concessions Meet Ford Approval

Economic Advisability of Reducing Prices as Suggested Gains Satisfactory Response

DETROIT, Oct. 9—While the effect of the Ford price reduction is being felt in reductions in the parts and material field, the real significance of the Ford influence is not discernible to those not conversant with Ford's personal efforts to stimulate the movement throughout the industry.

An official of the Ford Motor Co. said to-day the company had not demanded reduced prices on steel and other materials and parts but had suggested to all sources of supply the "economic advisability of fostering and furthering the movement and had been gratified by the wholehearted response," not one of the concerns approached failing to cut promptly to the extent of its ability.

F. H. Diehl, purchasing agent of the company, when asked regarding the attitude of the concerns who responded, declined to name the companies or specify the particular material or units on which reductions were quoted. Diehl admitted, however, that the suggestion and the responses in some instances, notably steel, covered contracts which have been in force some time.

From another official of the company it was learned the Central Steel, American Steel & Wire Co., and the Carnegie Steel Co., the two latter subsidiaries of the United States Steel Corp., through representatives had been in conference with Ford officials relative to the price cut. This same official said while the reductions were not as large as the cut on Ford products it was sufficient to satisfy Ford officials that material men and parts makers were willing to join Ford in his announced effort to stabilize industrial conditions.

Reasonable Profits Only

At the office of C. H. L. Flinterman, vice-president of the Detroit Pressed Steel Co., it was said to-day that the time has come when manufacturers must reduce costs to a minimum and take only reasonable profits. A desire to rush production rather than minimize costs was declared to be responsible for high costs and it was added that the readjustment period has arrived. While the company has announced no price reductions, it was stated these facts will be taken into consideration in quoting on new business.

While most parts makers are maintaining their list prices, it is understood several of them have informed their salesmen they can make cuts as high as 15 per cent if it is necessary to get business. This part of the industry seems to be resigning itself to the belief that prices must trend downward with those of automobiles.

Committees representing the National Automobile Chamber of Commerce and

the Motor and Accessory Manufacturers Association will meet here within the next week or ten days to determine some plan of co-operation in balancing inventories and preventing cancellations after orders have been placed by car makers. Cancellations have caused a heavy loss to the parts manufacturers and they want to know definitely where they stand before they place orders for raw materials.

Think Ford to Make Railroad Equipment

DETROIT, Oct. 9—Removal of the Ford tractor plant from Dearborn has given rise to much speculation as to what use the Dearborn plant will be put to in the future and Ford officials declare the company is as much in the dark on that score as the public. They declare the plant will be utilized for Ford production, but whether that will mean the building of air craft, a new passenger car, or locomotives and cars for the Detroit, Toledo and Ironton Railroad, apparently is undecided.

It is known that Ford has his own ideas regarding the type and construction of cars for his railroad as well as the locomotives that will pull the trains. It is known that he feels there is much loss in fuel in propelling the heavy type locomotives now in use and it is regarded as highly probable he will devote his efforts and the Dearborn plant to the construction of a railroad engine conforming to his own ideas.

From the sources closest to Ford it is learned the utilization of the Dearborn plant as a car shop for D. T. & I. construction is the best bet though the original plan was to use that plant in the development of the Ford air craft plans.

TO HOLD GOOD HIGHWAYS MEET

NEW YORK, Oct. 9—A "Protect the Highways" convention will be held at some city in the Middle West under the auspices of the motor truck committee of the National Automobile Chamber of Commerce on Dec. 10. The place for the meeting has not been definitely determined. Arrangements for the convention will be in the hands of a special committee headed by George M. Graham. The purpose of the meeting will be to prove that the automotive industry is behind all legitimate movements for the protection of highways and to educate the public to importance of good roads.

HAYNES STUDIES CONDITIONS

KOKOMO, IND., Oct. 11—The Haynes Automobile Co., this city, is investigating existing conditions of the passenger car market throughout the United States. Three of its executives, S. M. How, general sales manager; J. A. Benell, assistant general manager, and Gilbert U. Radoye, advertising director and sales promoter, are on extended trips. Bankers, business men and newspaper publishers will be consulted as to the passenger car situation.

Deny Ford to Buy Victor Rubber Plant

Company Located on Ford Railroad Says No Negotiations Have Been Conducted

SPRINGFIELD, OHIO, Oct. 11—Henry H. Durr, president of the Victor Rubber Co., declared to-day that he knew absolutely nothing about reported negotiations with Henry Ford for the purchase of the plant.

"So far as I know," Durr said, "none of the stockholders have been approached by Mr. Ford or his representatives. Frank R. Talbott, our general manager, and myself are the principal ones involved, and they surely would come to us if there was any movement on for the purchase of our plant. There is absolutely nothing to the story, and the report may have been circulated for a purpose in the matter of prices."

When Durr was asked if Talbott was going to Detroit to-morrow, he said either Talbott or one of the company's factory representatives would visit the Ford plant this week for a conference in regard to specifications and orders.

"Although we have a representative in Detroit," he said, "some of us visit the Ford plant frequently. We are making 200 rubber mats daily for the Ford company. We have a good business from this company. I have not talked with Mr. Talbott about who is going up to Detroit at this time."

Talbott also asserted he knew nothing about negotiations with Ford for the purchase of the company. He said that while he was going to Detroit to-morrow on business at the Ford plant, it had no possible connection with the sale of the property.

The Victor plant employs more than 500 workers and expansions are proposed. This city is on the Detroit, Toledo & Ironton Railroad, recently bought by Ford.

Ford Places Contract for New Tire Supplies

DETROIT, Oct. 9—Reports that Henry Ford was negotiating for the Firestone Tire and Rubber Co. properties during a recent conference of the Detroit manufacturers with Harvey Firestone at Akron, appear to have resulted from the purchase by Ford of a great portion of the product the Firestone company as well as other companies in the Akron district. Ford officials denied any significance in the fact that Ford and his son were house guests of Firestone and declared the close friendship of Ford and Firestone alone was responsible.

It was admitted, however, that Ford's visit to Akron was with the view of discussing conditions affecting the industry and it was also admitted that as a result of conferences large orders for tires were placed.

Propose \$11,500,000 Standard Parts Fund

Committee Presents Plan by
Which Stockholders Would
Subscribe \$4,000,000

CLEVELAND, Oct. 9—A proposed \$11,500,000 refinancing plan to save the Standard Parts Co. was put forward today by the reorganization committee appointed by Federal Judge D. C. Westenhaver, who granted the receivership applied for.

The reorganization committee proposes that the finances needed to put the company back on its feet be raised as follows: Preferred and common shareholders are to be asked to subscribe for at least \$4,000,000 of new preferred stock, the remainder of the funds to be provided by Cleveland banks and investment houses.

Cyrus S. Eaton, of Otis & Co., chairman of the reorganization committee, announced the program and the summary of the committee's statement is that Standard Parts is not insolvent and that its business is excellent, but it is handicapped for want of sufficient working capital.

Details of the refinancing plan follow:

1.—Issuance of \$4,500,000 or an authorized amount of \$6,500,000 Class A preferred stock paying 8 per cent dividends to be subscribed by present preferred stockholders in an amount equal to 25 per cent of their holdings and by common stockholders in an amount equal to 20 per cent of their holdings.

2.—Issuance of \$3,000,000 of 8 per cent debenture stock to be underwritten by a syndicate of Cleveland investment houses.

3.—Cleveland banks to provide the remainder in the form of credit.

Provisions covering the Class A preferred are to be the same as those of the debenture stock, except the latter is senior as to dividends, liquidations and redemption.

To Redeem \$300,000 Annually

The debenture stock is to be redeemed at the rate of \$300,000 each year, beginning Jan. 1, 1922, at \$110 a share, the company having the option to purchase the stock in the open market at not more than \$110.

Class A preferred is to be redeemed at \$115 per share at the rate of \$300,000 a year after the debenture stock has been redeemed.

Preferred stockholders who make the subscription offered shall have the right to convert into the Class A stock, share for share, an amount of present holdings equal in par value to 50 per cent of the amount of the new stock subscribed for. Common shareholders shall have the same privilege up to 30 per cent of subscription.

Payments of all subscriptions are to be made 25 per cent within 20 days of date of subscription and three installments of 25 per cent each three, six and

nine months after the subscription date.

The conversion privilege enables stockholders to exchange part of their holdings into a prior lien issue. It is further provided that the company shall maintain net quick assets of not less than 100 per cent of the par value of the new securities. Dividends on both classes of stock are to be cumulative, payable quarterly—Jan. 1, April 1, July 1 and Oct. 1. No dividends are to be paid on any other classes of stock when the company is in arrears in the payment of dividends or in the redemption of the debenture of Class A preferred.

Would Reorganize Directors

The reorganization committee also proposes that the board of directors of the Standard Parts Co. be reconstituted and that names for new board members be proposed by Fred H. Goff, president of the Cleveland Trust Co.; Andrew Squire, lawyer, and J. O. Eaton, president of the Standard Parts Co.

F. F. Prentiss, Frank A. Scott and George A. Coulton, all well-known Cleveland men, are proposed members of a committee to enter into contract with J. O. Eaton and his associates to continue as executives of the company for a number of years.

The lifting of the receivership under which the Standard Parts Co. has been operating since Sept. 1 and the meeting of current obligations are immediate objects sought by the committee.

Committees representing the creditors and the common and preferred stockholders have approved the proposed refinancing.

"The success of the plan is absolutely necessary to prevent forced liquidation of the company," said Chairman Eaton. "The first step will be the offering of the new preferred stock to present shareholders for subscription, subject to ratification of the whole program at a stockholders' meeting. If sufficient stock is not subscribed, the banks interested will not extend credit, the investment houses will not act as underwriters, and the property must be sold. What stockholders will get in the event of liquidation will be problematical.

Forced Sale Disastrous

"Under present monetary conditions such a forced sale could not possibly bring full value of the properties. It has seemed to the reorganization committee that the preservation of such a large industrial unit as Standard Parts will have a direct influence upon economic stability and prosperity in this community. The offer of vigorous assistance which has been made by a group of banks is most notable and should be taken advantage of by stockholders in order to protect their own interest."

STANDARD GETS SPANISH PRIZE

NEW YORK, Oct. 8—A Standard 2½-ton truck was awarded a gold medal at the International Trials held at Barcelona-Madrid, Spain. It competed with twenty-eight of the leading truck makes from England, France, Spain, Italy, Switzerland and Germany.

Manufacturers Join in Tractor Service

Fordson and Oliver Representatives to Swap Repairs in
Interest of Efficiency

LOS ANGELES, Oct. 9—The perfection of service to the farmer so that ranch efficiency can be speeded up and when motorized equipment is used not ruined entirely through a break in the equipment, developed at the recent National tractor show here to be the biggest need of the tractor business to-day. Tractor users have raised the cry that when their machines fail to function and they have to wait for hours, or in some instances days, before repairs can be made the loss is greater than can be compensated for by using motor equipment.

This subject received a thorough discussion at a conference in which the dealers in Oliver implements and Fordson tractors participated. Howard Seeley, Marshall Collins and Blair Davis, representing the Oliver Chilled Plow Co., were present at the conference, and all the dealers representing the W. L. Hughson Co., State distributor for the Fordson, heard these men say they advocate a mutual benefit policy. That some system must be arrived at to keep tractor and power implement users satisfied was conceded. Both organizations agreed to furnish parts promptly and at all times to maintain liberal stocks of parts.

The Oliver representatives said they would send their service men throughout the State, have them visit every Fordson dealer and learn who was having trouble, and make the repairs or adjustments. These men are to be skilled enough to repair the tractors if the fault is with them and not the implements. The representatives of the Ford Motor Co. took a similar attitude and declared that hereafter Fordson service men will make it their business to keep both tractors and implements in operating condition. It was agreed that as a means for overcoming sales resistance service is the prime requisite.

KING TO MOVE DECEMBER 1

DETROIT, Oct. 9—King Motor Car Co. is preparing to move into its new factory building in the center of the automobile manufacturing district Dec. 1. The building, 215 by 240 ft., contains 10,000 more feet of floor space than the three buildings the company at present occupies and is of brick and Fenesta sash construction with steel I-beams, Egyptian roof and cement floor. The plant is located at Conant Avenue and the Grand Trunk Railroad and furnishes opportunity for plant expansion precluded in the present location, which is flanked on either side by buildings of the United States Tire & Rubber Co. The company has been in its present location eight years, having disposed of it recently to the United States Tire & Rubber Co.

Predicts Tire Peak to Drop 30 Per Cent.

**Official Says Production Will Fall
From Recent Records—Eu-
rope's Industry Poor**

AKRON, Oct. 11—"Akron's rubber factories will never again attain the high state of production which they maintained in the past few years, and Akron's business men must plan accordingly and prepare for pre-war conditions." This is the pith of a declaration made by John R. Gammeter, aeronautical expert of the B. F. Goodrich Co., speaking at the monthly meeting of the Akron Builders Exchange here.

Gammeter recently returned from a tour of Europe, where he made a survey of business and industrial conditions and has made comparisons of conditions in Europe and the United States in the rubber industry. He declared that during the "high pitch" period the three largest Akron factories each turned out 35,000 tires a day. He placed a limit of 25,000 tires for each as the daily output, the "high point" hereafter in Akron.

With respect to Europe he said conditions there are similar to what are to be found here, in the tire manufacturing industry and others as well. "Everywhere," he said, "workers are being laid off and in England thousands are being forced into idleness because the American tire manufacturers are underselling the British, and this despite the fact that the American wage is about three times as high as the wage paid in British tire plants."

He declared that the British tire manufacturers are working to have a heavy import duty placed on tires which, he said, will close the English market for American tires.

Describing conditions as he found them in Germany, he said: "Germany is low, financially, as low as that country ever will be, but when Germany starts up it will come strong. The Germans, regardless of class or station, are living in the same manner and all are busy. I found the same conditions in France, but to a smaller degree."

Statement Meets Opposition

Gammeter's statement relative to what has been and what may be expected in the tire industry was subjected to considerable comment "on the street" here following its utterance and, generally speaking, he is not supported in his views. Reduced to a consensus this is the comment:

The law of supply and demand will always operate. There are now 8,000,000 cars in operation in the United States to-day and the contemplated output of the American car builders for 1921 is placed at 2,500,000. Thus at least 10,000,000 cars will be in operation in 1921. Each car uses five or six tires a year.

There are between 150 and 200 tire factories in the country at the present

time, and new ones are continually being added, and small ones are dropping out of the game from time to time. The smaller factories "cannot stand the gaff" and will be forced to quit.

As regards foreign or export trade the well known Akron made tires will always be in demand throughout the world, "at any price," for the one reason that they are better (with a few other well-known tires made in other cities) than any foreign product, have an international reputation for wearing quality and mileage and will not be superseded by foreign makes.

The tire industry is slower to-day because the slowing up process was not begun earlier. Too many tires were made early this year when an "easing off" should have been observed. There are too many tires on hand with the dealers now. When these are used up, when the new cars are in operation, "Akron factories will get back to capacity, whatever it is."

Open Cars Restricted to Movement of Coal

WASHINGTON, Oct. 9—Shipments of automobiles and trucks in open-top cars will be curtailed as a result of the issuance of a new service order by the Interstate Commerce Commission to-day prohibiting the use of this equipment for any purpose other than coal movements and certain essentials under special arrangement. The edict which supersedes Service Order No. 16 practically abolishes the permit system under which trucks and other equipment were allowed in open-top cars when as empties moving back to mines.

The demand for coal has become so insistent that the Commission determined to take drastic measures to meet the emergency. It was found that under the other order approximately 162,000 permits had been issued which, if available would move about one million tons of coal daily. All outstanding permits for the use of coal cars for transporting other freight have been canceled, effective Oct. 10.

Road building work will be hampered to some extent, but the Commission will allow the use of open-top equipment for the movement of road building material on the presentation of sufficient evidence that the work must be completed.

EMPIRE CREDITORS TO MEET

DUNKIRK, N. Y., Oct. 11—A meeting of the creditors of the defunct Empire Axle Co., this city, will be held Oct. 16 at 10 a. m. at the Bankruptcy Court in the Graf building here. John P. Abbott, trustee in bankruptcy, states in his first report that the assets of the corporation have been sold and that he now has in his hands for distribution the sum of \$35,000 to take care of payment of all claims entitled to priority and a dividend not to exceed 5 per cent on unsecured claims. Unsecured claims amount to \$420,534.72 and secured claims assumed, to \$40,421.94.

Cleveland to Get Larger Coal Supply

**Railroads and Mine Executives
Provide Large Additions to
Daily Supply**

CLEVELAND, Oct. 11—Cleveland automobile manufacturers who have been viewing with alarm dwindling coal supplies have been relieved considerably by an agreement between representatives of the Cleveland Chamber of Commerce and railroad officials whereby this city is to receive more coal daily.

During the spring and summer and early fall months millions of tons of coal are hauled from the mines in Southern Ohio across the Buckeye State to lake ports, and then transported to the Northwestern States. By this system, lake boats that come down with iron ore and other products of the Northwest return up the lakes with cargoes of coal.

In the past while this north-bound coal has been moving up the lakes at the rate of 2,000,000 tons a month during navigation season, sufficient coal has been provided to care for the State's needs, but this season fewer miners have been working, car deliveries at the mines have been poor, and automobile plants along with other establishments in Buckeye industrial centers have been on a hand-to-mouth basis so far as coal is concerned.

Representatives of the Chamber of Commerce have obtained an agreement with Daniel Willard, chairman of the advisory committee of the American Railway Association, and Col. D. B. Wentz, president of the National Coal Association, whereby Cleveland is to receive between 140 and 150 more cars of coal daily than have been coming into the city. The additional coal will be a great help until navigation closes and shipments to the city are increased.

A canvass of local manufacturers disclosed that the Peerless Motor Car Co. is not too well supplied with coal, while the Winton Co. has been scurrying about for fuel. The Chandler Co. has had difficulty in obtaining sufficient, while the Grant people have been hard pressed. Other industries have also experienced the pinch of shortage.

COMMODITY RATES SOUGHT

NEW YORK, Oct. 11—The Traffic Department of the National Automobile Chamber of Commerce, of which J. S. Marvin is manager, has filed exception with the Interstate Commerce Commission in the transcontinental rate case on the ground that automobile and truck shipments, which constitute one of the heaviest items of traffic to the Pacific coast, are entitled to commodity rates on this long haul on a lower basis than any class rates which may be decided upon. It also is contended that the proposed minimum weights are excessive on the longer freight cars. The commission has assigned this case for argument Nov. 4 and 5.

Manufacturers See Normal Times Near

Willing to Back Industry to Last Dollar if Necessary—Denounce False Rumors

(Continued from page 786)

Courage to meet the trials of the future was apparent on every hand. There was no pall of gloom over the meeting. The men assembled were willing to invest their last dollar in the industry which has made more phenomenal strides than any other. They realize that a readjustment of all business is at hand and that they must bear their share of the loss which always attends readjustment. They felt that if the industry could not stand up under adversity and take care of itself, it had no right to be as big as it is. They felt that this is a time when well-balanced minds and good sense are essential and that there should be as few explanations as possible, especially in the newspapers. Speakers denounced the scandal mongers who circulate false reports of various companies being in financial difficulties.

The manufacturers were unanimous in the belief that every one connected with the industry should put his house in order in preparation for a still further slump in business for the next two or three months. It was believed the first of the year, with the usual Christmas buying and the automobile shows, would bring brighter prospects and with the coming of spring conditions would return to normal.

One of the most gratifying results of the meeting was a determination to have the entire industry present a united front during this crucial period. The members felt the attitude of antagonism which has arisen between some car manufacturers and some parts makers on the question of prices, was unfortunate and that it should be eliminated so far as possible. The advisability of price cuts was held to be a subject which each man must determine for himself and one which was his own exclusive business.

Committees Study Prices

It was decided to appoint a special committee to confer with another committee representing the Motor and Accessory Manufacturers Association with a view to reaching a better understanding of the needs of both these factors in the industry in their relations to each other. The parts manufacturers are anxious to get a definite line on the amounts of raw materials and completed parts which the automobile manufacturers are likely to need for the remainder of the year.

Full recognition was given to the delicate position of the parts manufacturers, resulting from cancelling of orders after materials to fill them had been pur-

chased at high prices. This factor makes it as difficult for them to reduce prices as it is for the passenger car and truck producers. It was shown, however, that there is a general trend downward in parts and accessories. Some of the companies, while maintaining their list prices, have instructed their salesmen to cut as much as 15 per cent if it is found necessary to get business. The special committee representing the two organizations, it was believed, would be able to accomplish much in the way of cementing friendly relations and bringing about a better understanding of the problems which confront each.

Durant Sends Message

W. C. Durant, president of General Motors Corp., sent word that he was unfortunately prevented from attending the meeting, but he desired to send a message to his fellow manufacturers, which, in substance, was as follows:

"The automobile industry has grown to its present size on the merit of its product, combined with efficient merchandising methods. It would not be entitled to its present high position if it was not able to weather an occasional storm or readjustment such as it is now passing through along with other industries in the country.

"It seems to me that this is the proper time for careful thinking, the placing of various departments of our business in order and an ideal time to further the efforts of our sales departments.

"This readjustment was a perfectly natural thing to expect at this time and when the country settles down to normal and the present hysteria passes our industry will be found stronger than ever.

"It is not the time for too many apologies or statements in the newspapers, but a time for sound reasoning and action based on the knowledge of the facts. We should look forward to the usual buying enthusiasm at the shows followed by a big demand for motor cars and trucks.

"I am as much of an optimist on the future of the automobile industry as I ever was."

SMITH OFFICIALS ADVANCE

MILWAUKEE, Oct. 11—John P. Kelley has been appointed sales manager of the A. O. Smith Corp. with E. A. Barlow and C. W. Wright as assistant sales managers. Kelley has been advanced from the position of assistant sales and advertising manager, to succeed James L. Sinyard. It has become necessary for Sinyard to devote more of his time to matters connected with his office as secretary and director of the corporation, but he will still continue to act in an advisory capacity to the sales department. Sinyard and Kelley have been with the Smith organization for twenty-three years, and together they have gone through the gamut of the business. Barlow and Wright have been active in the sales department for a number of years, and both are well and favorably known to the automotive industry. The Detroit office is under the management of F. W. Lawrence.

Education to Solve Gasoline Situation

Bureau of Mines to Carry Campaign to Public—Must See Other Fuels

WASHINGTON, Oct. 9—Assurances have been given by the Bureau of Mines that the fanciful tales concerning the ultimate failure of the automobile industry through exhaustion of gasoline supplies will be dissipated in a campaign of education which will be undertaken in an effort to stimulate production, encourage economy and restore confidence. All branches of the industry, particularly the automotive engineer, responsible for the construction, and the owner, will be asked to co-operate.

The bureau has given wide circulation to the opinions expressed by J. O. Lewis, chief petroleum technologist, in which it is made clear that the country cannot reasonably expect the domestic production of crude petroleum to meet the ever-increasing demand for petroleum products. He has recommended investigation of domestic resources other than oil to provide fuel.

As for the mechanical improvements, the chief technologist indicts both users and manufacturers charging that "our automobiles are needlessly extravagant and inefficient. No one knows how much the consumption per car might be reduced by improved construction and operation. Petroleum products should be put into their most essential and irreplaceable uses. The use of fuel oil should be diverted from use in steam raising as soon as practicable and used in internal combustion engines.

"Cracking heavy oil into gasoline is an economic loss which should be tolerated only until the problem of a satisfactory automotive engine for consuming the heavy oils can be solved. In cracking there is both a loss of material and a loss because of manufacturing costs, yet the gasoline resulting yields hardly half the power in the automotive engine of to-day that the original heavy oil would in a Diesel type of engine."

Lewis says that a solution of the problem can only come through a sympathetic co-operation of dependent industries, principally the automotive.

SHALE OPERATIONS STARTED

KANSAS CITY, Oct. 9—A corporation headed by southwestern oil shale men with headquarters at Kansas City are building at Grand Valley, Col., a commercial oil shale production plant. The Stallman process, designed by Otto Stallman, mining engineer and metallurgist of international reputation, for producing crude oil, has been adopted. The Wells oil refining process for refining will be installed. It is estimated that process will give from thirty to fifty gallons of crude oil per ton which will refine into 19 per cent gasoline and 50 per cent motor oil.

Reeves to Address on Motor Exports

Pleads Cause of Fair Treatment in All Foreign Business Be- fore Manufacturers

NEW YORK, Oct. 14—Alfred Reeves, general manager of the National Automobile Chamber of Commerce, will be one of the speakers to-night at the annual dinner at the Waldorf of the American Manufacturers Export Association. His subject will be "How America is Motorizing the World." He will take advantage of the opportunity to prove to the bankers who are expected to attend that the automotive industry is so big that it cannot fall. The automobile business alone now amounts to 8 per cent of all the exports from this country.

Reeves will make an appeal to exporters for fair treatment of purchasers in foreign lands. He contends that no goods should be shipped abroad except under their American names and with a full guarantee of satisfaction and service. He will arraign the practice of some houses of exporting automobiles which are assembled exclusively for sale in other countries and upon which it is impossible to give adequate service.

He will take the position that the sale of such inferior goods gives a black eye to the entire industry. The exporters will be told that American automobile manufacturers do not object to foreign competition and that they went on record some time ago as being willing to have a sharp reduction made in the import duty on motor cars.

Makers Discouraged With Turn of Events

(Continued from page 789)

The one hope of English manufacturers is that the Olympia show may tend to stabilize conditions somewhat. It is felt that prices should become firm again at that time and that the show will give the public some new ideas. At present prospective buyers expect to get cars at 25 per cent to 50 per cent off present prices. Nothing like the present condition has been experienced in the history of the industry in England.

The money situation here is similar to that in the United States. There really is an immense amount of ready cash in the country but the people won't spend it. Partly because of labor troubles persons with a few hundred or a few thousand pounds are keeping it locked up. The banks have shut down on loans to manufacturers. This is partly in the hope of killing the excess profits duty but partly with the deliberate intention of weeding out weak firms and leaving room for stronger ones. Another factor governing the banks' stand is that they are not inclined to let money out while

CLIFTON ADVISES CAREFUL DECISIONS

NEW YORK, Oct. 9—In one of his well balanced, co-operative talks before the National Automobile Chamber of Commerce meeting this week Charles Clifton, president, said among other things:

"Changing conditions in the automobile industry warrant very careful action on the part of all companies before making decisions.

"We would be unworthy of our present standing as the second largest manufacturing industry in America if we were not resourceful enough to handle our affairs for the best interest of our stockholders and the buyers of our cars and trucks, and adjust ourselves to the new conditions which prevail throughout the country, not alone in our industry but in all industries.

"No industry that has increased 750 per cent in the past five years could expect to escape a readjustment even though the general conditions in the country did not require the readjustment. It will all be for the best.

"Depressions in the automobile industry in the past have been for short periods as clearly shown in 1907, again in 1913 and again in the early part of 1919. There is nothing in the general condition of the country that indicates a long period of depression.

"I want to preach the need for conservatism in statements relative to our companies. There seems too much eagerness to accept and repeat statements about the financial stranding of companies. Rumors carrying bad news travel fast and do unnecessary harm. In an industry famed for its co-operation, cannot we discourage idle rumors not alone on the part of the heads of the companies but on the part of our salesmen and our traveling men, both among the parts and accessories makers, the dealers and our own manufacturers.

"Each manufacturer should feel free to tell the truth about his business and its requirements as to marketing plans. He probably will hesitate, however, to sell short on the future of his own industry or to sell short on the future of the United States."

there is talk of general strikes and revolutions.

English automobile manufacturers have not taken any action to prevent importation of low priced American cars and there are no indications yet that they will follow the example of their French brethren. The industry in Italy has not begun to recover from the effect of the revolutionary strike and it is difficult to forecast when it will.

Manufacturing Drops in Detroit District

Hundreds of Employees Facing Lay-off as Depression Hits Car and Parts Plants

DETROIT, Oct. 13—The Gemmer Mfg. Co., employing 500 men and making gears for 60 of the leading automobile factories, has closed its plant and will remain idle until after election. G. E. Wilder, vice-president, says the company rushed production in September and built up an enormous stock which it was unable to deliver because of the slowing up in automobile demand and consequent production curtailment.

The real effects of the depression in the industry now are beginning to be felt in Detroit. Ford is hiring no men, and in fact some are being laid off. Men employed in the offices are being transferred to the factory, as far as possible, to keep them at work.

Only a comparatively few men are at work at the Hudson plant, and Packard has laid off a considerable number. Aside from Hupp and Dodge the same situation is general, and even at these two plants no employees are being taken on.

When Frank Smith, of the Fisher Body Corp., was asked regarding a report that the company would close many if not all of its 32 plants, he referred the inquiry to Fred Fisher, the general manager, who is out of the city. Hundreds of Fisher employees are idle and reports persist that the plants in Detroit, employing 15,000 workers, will close temporarily.

YOUNG CUTS SPRING PRICES

DETROIT, Oct. 12—L. A. Young, president of the L. A. Young Industries, formerly the Detroit Wire Spring Works, in telegrams to his customers, announces radical reductions in the prices of cushion springs. Mr. Young announced that the prices would become effective at once, despite the fact that a great majority of the firm's contracts, amounting to many millions, had some months to run. He declared the company was prompted by a feeling that the patriotic duty of the manufacturers of this country was to aid in a return to normal prices.

DU PONT PRODUCTION STARTS

MOORE, PA., Oct. 9—The local factory of the du Pont Motors Co. of Wilmington, Del., is now being put into operation with a capacity of 150 cars a month and facilities for turning out at least 50 more. The local works will continue to make engines for the cars.

HOOD STOPS PRODUCTION

WATERTOWN, MASS., Oct. 9—The tire plant of the Hood Rubber Co. closed in nearly all departments to-day for an indefinite period. About 900 employees are affected.

Service Essential for Mexican Trade

Only Limitation to Vast Market Possibilities Is Attitude of Makers and Exporters

NEW YORK, Oct. 9—The greatest limitation on the sales of American automotive equipment in the Tampico district and other parts of Mexico is the American manufacturer and exporter. With the markets properly cultivated and with the rendition of real service in spare parts and repairs, the sales outlets offered by our southern neighbor are potential of great results.

That declaration was made here to-day by E. B. Crook of the Tampico Automobile Sales Co. of Tampico, Mexico, which holds the agency there for Willys-Overland passenger cars and Republic trucks. Crook is a citizen of the United States and a truck enthusiast. For months he has been selling motor trucks for use in the oil industries of Tampico, a market which he states is a "mighty big one." "But," to quote him again, "the oil interests will use only a fraction of the number of trucks that the Mexican agricultural districts will absorb in the next few years, given a stable government and the peaceful conditions that now seem to be expected."

"We are just beginning to uncover the agricultural possibilities," he said. "They are almost untouched as yet. Mexico will grow anything—wheat, corn, oats, sugar cane, barley, cotton and forage crops. The start has just been made in the raising of sugar cane and there is more ground available for such cultivation in Mexico than in all of Cuba. In the Tampico district we are just at the point of selling a fleet of six trucks to one such plantation and that will open the way to many more sales for the same work."

RAPID RIM IN RECEIVERSHIP

HUNTINGTON, IND., Oct. 9—The Rapid Rim Co. of this city, which was practically ready to begin the manufacture of patented rims, piston heads, piston rings and other automotive parts, has gone into the hands of a receiver on petition of 46 stockholders of the company. E. E. Allen was appointed receiver. The suit is a friendly one and was brought for the purpose of giving the stockholders time to reorganize and finance the company. The total indebtedness is said to be about \$92,000.

EMBARGO ORDERS ISSUED

WASHINGTON, Oct. 12—With the approach of winter when traffic congestion causes embargoes on various commodities, the shippers of automotive equipment will be obliged to observe the new instructions governing handling of embargoes as issued by the American Railway Association and effective Oct. 15. The Car Service Division has divided

the United States and Canada into ten districts with a district chairman in charge of embargo arrangements. Defining the application of embargoes, the Car Service Division made it clear that it is not proper to issue an embargo to prevent acceptance of "freight in certain classes of cars, such as automobiles in open cars; or during the winter months bulk material in open cars."

All Space Assigned for National Shows

(Continued from page 788)

A-28	Auburn	F-1-X
A-29	Haynes	G-1-X
A-1	Columbia	E-4-X
A-6	Jordan	E-1-X
B-28	Elgin	H-1-X
B-26	Stutz	O-2-X
B-29	Liberty	G-2-X
B-25	Briscoe	B-1-X
B-8	Apperson	J-1-X
B-12	Grant	O-1-X
B-24	Stearns	P-1-X
B-23	Westcott	E-3-X
B-2	National	N-1-X
B-15	Elcar	F-2-X
B-30	Allen	M-1-X
B-16	Kissel	M-2-X
B-1	Locomobile	B-1-Y
B-3	Premier	B-2-Y
B-9	Moon	B-7-Y
B-4	King	A-8-Y
B-17	Standard	A-4-Y
B-18	Case	A-3-Y
B-10	Templar	B-3-Y
B-6	Roamer	B-4-Y
B-7	Mercer	B-2-Y
B-31	Monroe	B-5-Y
B-14	Crow-Elkhart	E-1-Y
B-22	Davis	A-6-Y
B-13	Anderson	Q-2-X
B-21	Milburn	B-6-Y
B-20	Maibohm	O-1-X
C-20	Holmes	A-5-Y
B-19	Paterson	Q-3-X
C-3	R. & V. Knight	A-1-Y
C-16	Commonwealth	E-2-Y
C-4	Dorris	C-1-Y
B-5	Jackson	B-8-Y
C-11	Dixie Flyer	D-2-Y
C-12	Detroit Elec.	E-6-Y
C-19	Pilot	C-6-Y
C-15	Saxon	E-3-Y
C-5	McFarlan	L-1-X
C-14	Sayers	E-5-Y
C-18	Kline	Not
C-13	Lorraine	E-4-Y
C-2	Lincoln	A-7-Y
C-1	Lafayette	D-1-Y
Not	Gardner	C-5-Y
C-21	*Stevens-Duryea	C-4-Y
C-7	*Stanley	C-2-Y
C-6	*Fergus	Not
C-22	*Hanson	Q-4-X
C-17	*Noma	Not
C-10	*Fiat	C-3-Y
C-9	*American	Not
C-8	*Pan-American	Not
B-1	*Rauch & Lang	Not
D-2	*Friend	Not
D-3	*Piedmont	Not

MORE MEN FOR ROLLS-ROYCE

SPRINGFIELD, MASS, Oct. 13—One hundred and fifty men have been added to the Rolls-Royce force in this city, making 650 all told. Units assembly is about to begin. Claude Goodman Johnson, head of the Rolls-Royce companies, has arrived in America for another visit.

America to Attend Paris Air Meeting

Delegation Will Represent Industry and Governmental Agencies at Standards Discussions

WASHINGTON, Oct. 12—President Wilson has sanctioned American participation in the deliberations of the International Aircraft Standards Commission at Paris Nov. 26. As a result of this authorization five representatives, three from Government agencies and two from the aircraft industry, will be appointed within a few days. Because of the fact that the last Congress failed to provide for this country's representation at the gathering, the President, in his letter to the National Advisory Committee on Aeronautics, has made it possible to send a delegation which must necessarily be unofficial in the absence of Congressional authority.

It appeared for a time that it would be impossible to have American spokesmen at the international meeting. The uncertainty which prevailed caused great concern in the industry as well as Government circles. The President's letter, giving his approval to the plan, solved the problem, though the lack of official recognition may handicap the American agents to some extent. Only one appointment has been received by the advisory commission. Commander Arthur Atkins, formerly in charge of navy aircraft engineering but lately assigned to the Shipping Board, is the representative of the Navy Department.

The conference is of the utmost importance to engineers and others interested in aircraft development. AUTOMOTIVE INDUSTRIES was advised to-day that the tentative program of the conference embraces engineering problems of the first magnitude so that the conclusions or recommendations will have a far-reaching effect in the manufacture of aeronautical equipment.

It is authoritatively stated that the conferees will discuss the advisability of continuing the International Aircraft Standards Commission on its present lines. In event the conferees vote to continue the international organization, the question of confirming Belgium and Japan as members of the conference will be settled before adjournment.

It is further proposed to discuss the standardization of aircraft parts; standardization of co-efficients used in experimental work with wind tunnels; factors of safety and engine tests for various types of airplanes.

DANIELS DESIGNS NEW BODIES

READING, PA., Oct. 9—Although the Daniels Motor Car Co. of this city will continue to make its present style of chassis without change for the present year, the company's engineers are designing two new body styles. One of these, which is nearing completion, is to be a four-passenger chummy roadster.

INDUSTRIAL NOTES

Patriot Motors Co., Lincoln, Neb., has sent representatives to Houston, Tex., to confer with the Chamber of Commerce of that city in the erection of a branch of its truck body building plant in that city. L. A. Winship, secretary and treasurer of the company, made the trip from Nebraska by airplane.

Rutenber Motor Co., which sold its plant to the Velle Motor Co., has bought the plant of the American Chain Co., in West Marion, Ind., and will begin operations Oct. 15. The company will manufacture automobile parts and motors. A large force will be employed.

Liberty Mfg. Co. is completing the first unit of a plant at Stratford, Conn., for the manufacture of air-cooled motors of from four to twelve cylinders. The company has a large order from a foreign concern for 6-cylinder motors.

Sparks-Withington has completed two new units at its Jackson, Mich., plant which will enlarge present floor space 85 per cent and permit of needed expansion. The Spartan horn department will be greatly enlarged.

Kelly Reamer Co. has moved into a new plant at 3705 West Seventy-third Street, Cleveland. The new plant has been designed to meet the particular requirements of its specialized business.

Ford Motor Co. is preparing to add 300 men to its staff at the Kearny plant and will increase its assemblage there from 375 to 475 cars. A new power plant has been installed.

Bay City Auto Body Co. has started work on bodies for several hundred Danby trucks which will be used in the mail service. The contract was given by the government.

California Tractors, Inc., Stockton, manufacturers of motor-driven agricultural tractors, is considering the erection of a new plant at Modesto, Cal.

Finley R. Porter and Robert C. Kay have opened general engineering offices at 56 Pine Street, New York, under the name Finley R. Porter & Co.

The Bearings Company of America will soon occupy its new plant at Lancaster, Pa., and will increase its production 50 per cent.

Wayne Engineering Co. has opened a New York sales office at 1400 Broadway, New York, in charge of Edmund Hoffman, Jr.

Walker Officials Form
New Axle Organization

CHICAGO, Oct. 11—The Walker Axle Co. has been organized with a capitalization of \$2,500,000 to manufacture the Walker balanced double reduction rear axle for motor trucks. William A. Fox is the president; G. A. Freeman, vice-president and general manager; John F. Gilchrist, treasurer; William S. Kline, secretary, and George R. Walker, chief engineer. The general sales manager is Lloyd J. Bohan.

The personnel indicates another branching out into the automotive field of officials of the Commonwealth Edison Co. of Chicago. Fox is vice-president of the Commonwealth company, president of the Walker Vehicle Co. and director of the Edward Valve & Mfg. Co., and Freeman is the vice-president and general manager of the Walker Vehicle Co. Walker is the former chief engineer

of that company and inventor of the drive. Gilchrist is one of the vice-presidents of the Commonwealth company and is president of the Federal Electric Co. of Chicago.

The Edward Valve & Mfg. Co. at its plant in East Chicago, Ind., is now manufacturing the axles but it is proposed to erect a plant to be devoted exclusively to the manufacture of the Walker axles at Eighty-seventh and State streets, Chicago, adjacent to the new modern factory buildings of the Walker Vehicle Co. and the Federal Electric Co. Until this new plant is erected the East Chicago factory will manufacture the axle.

The Walker Vehicle Co. has been in existence for the last ten years or more and is the largest manufacturer of electric trucks in the country.

New Ford Designed
But Waits Decision

DETROIT, Oct. 9—So many reports have been published regarding the new Ford car, each report bringing denials and evasions, that the mystery regarding the car has become almost impenetrable. No information is obtainable from Ford officials regarding the new car and in fact it is denied by those close to Ford that a new car is planned.

An official of the company admitted today, however, that a new car had been designed and could be put on the market if such course was deemed advisable. He qualified his statement by declaring "no conclusion had been reached regarding the bringing out of the car and if such decision was made it would require a year to get into production." Others contend the car could be put on the market in three months.

From unofficial but reliable sources it is learned the body of the new car will be streamline and will be fourteen inches longer than the present model. The engine is declared to be six-cylinder with improvements that minimize vibration.

PARENTI PLANT NEARLY READY

BUFFALO, Oct. 9—The new factory of Parenti Motors Corp. in Buffalo is nearly ready for occupation. Started late in August, work has been pushed so fast that part of the building may be occupied in two or three weeks and all of it in November. The factory is located on an 11-acre site in the heart of Buffalo's industrial district and will have a capacity of 5000 cars the first year. The first cars carrying the Parenti air-cooled motor will be produced in this factory in January.

KROYER TO BUILD TRACTOR

STOCKTON, CAL., Oct. 12—The Kroyer Motors Co., organized to manufacture the Model 30 Wizard 4-pull tractor, a four-wheel drive design, has purchased a 30-acre site here on which it will soon start to erect the first units of a modern factory. The company is a Delaware corporation with a capitalization of \$5,000,000 and J. M. Kroyer is president.

METAL MARKETS

IN spite of the backfire which has been caused in some quarters of the iron and steel industry as the result of price reduction announcements in the automotive field, the market is most decidedly headed toward levels at which consumers will feel disposed to place fresh contracts. There is some talk to the effect that at a meeting of the National Association of Sheet and Tin Plate Manufacturers held a few days ago at Philadelphia, it was insisted by the membership which is made up of the independent sheet producers, that the standard form of contract which the association adopted several years ago, is irrevocable and strictly enforceable, wherefore no member could grant price reductions in existing contracts without departing from the association's standard of trade practices. The truth of the matter, however, is that trade custom has always recognized the plastic character of contracts in the steel industry. In some parts of the trade it is considered good form to accept cancellation of contracts for semi-finished material without a murmur but to draw the line at cancellations of orders for finished steel. Whatever the surface sentiment may be, however, every steel producer will strive to hold as much of the business he has on his books, avoiding at the same time rupture of friendly relations with customers through a litigious attitude which would get him nowhere. Latest statistical reports show that the United States Steel Corporation now produces more than one-half of the total steel output and there is sufficient generalship left among the independents to forestall a general stampede of consumers to that source of supply by a reasonably conciliatory attitude. The independents fully recognize that, though they have orders on their books for the remainder of the year and, in some instances, into 1921, these must give out and new orders must be obtained from the same buyers to keep mills running.

Pig Iron.—Pittsburgh reports state that basic has been offered at as low as \$43. Valley, and in the foundry market cuts of from \$3 to \$5 from previous levels are in evidence. The market's further downward readjustment hinges entirely on the coal market. If coke comes down in response to deflated coal prices, pig iron will decline in proportion.

Steel.—Negotiations between automotive interests and strip steel makers over 1921 prices continue. First quarter 1921 prices may be announced next week. The market generally remains in abeyance.

Aluminum.—The Aluminum Co. of America has cut its price 2 cents a pound all the way around.

Copper.—While quotations have receded further and the general tone is bearish, those who are accustomed to the copper market's antics, have their ears to the ground in the expectation of one of those sudden over-night changes that so frequently in the past have taken copper consumers by surprise.

Brass.—"The Boston News Bureau" recently quoted an unnamed copper producer as having said that while smelters and refiners were selling copper at rock bottom, brass and copper rolling mills had refrained from lowering their prices. Brass mills, however, are little perturbed by this charge as their prices are always based upon more enduring grounds than the day by day changes in the copper and zinc market. When prices for the latter settle definitely on a higher or lower basis, corresponding changes in quotations for brass products invariably follow.

Automotive Financial Notes

Studebaker Corp. report sales running at the annual rate of \$100,000,000 or a full 33½ per cent more than in 1919. Orders on hand represent six weeks' production. Net profits of \$7,479,000 for the six months ended June 30 were more than double the net profits of \$3,523,000 for the first half of 1919. They were within 20 per cent or \$1,833,000 of the total \$9,312,000 for all of 1919, the best twelve months' period in its history. Earnings in the first six months were on the basis of \$11.86 a share on common. Allowing for stiff year-end inventory and special charge-offs, Studebaker should earn between \$16 and \$17 a share on its \$60,000,000 common stock.

Parish & Bingham Corp. reports earnings in August as \$111,616 before taxes, or approximately \$75,616 net, equal to an annual rate of about \$6 a share. During August the employee force was reduced and economies in operation inaugurated. Sales in September were approximately \$50,000 larger. Net earnings after tax reserves for the first eight months of the year were in excess of the entire year's dividend requirement of \$4 a share. All earnings for the final four months of the year are available for addition to the surplus.

Fageol Motors Co.—Last offering of \$200,000 common stock of the company is being made in blocks of one share 7 per cent preferred and one share of common with a unit par of \$20 for \$12.50. Proceeds will be used for the purchase of raw materials with which to increase output. The company's gross sales of trucks and tractors last year amounted to \$1,000,000 and it expects to do a business of more than \$2,000,000 this year.

Republic Rubber Corp. has reduced its indebtedness about \$4,000,000 in the past three months. On Sept. 30 the indebtedness was \$2,600,000 compared with \$6,443,991 as of June 30. Inventory on hand and in transit shows about \$5,000,000 as against \$8,972,456 on June 30. The company has declined offers to sell one or more of its plants.

Dunlop Tire & Rubber Corp. of America—A meeting has been called for Oct. 20 to vote on a proposal for reorganization of the company in New York State to permit the issuance of shares of no par value. The new shares are to be exchanged on the basis of ten for five shares of present standing.

Kelly-Springfield Tire Co. has declared regular quarterly dividends of \$1.00 a share in cash and 3 per cent in stock on the common stock and a regular quarterly dividend of \$2 a share on the preferred.

General Motors Corp.—The corporation does not contemplate any new financing. It is amply provided with funds for business at the present rate. The company is paying off its bank loans and reducing its inventory.

Sterling Tire Corp. will pay on Oct. 20 quarterly dividends of 1¼ per cent on the 7 per cent preferred stock, 2 per cent on the series B preferred stock and 1 per cent on the common stock.

Fisher Body Corp. directors have declared a 1¼ per cent dividend on its preferred stock, payable Nov. 1. At the same time a dividend of \$2.50 a share will be paid on the common stock.

Singer Motor Co.—Robert Szold has been appointed by Judge Mack receiver for Singer Motor Co., Mt. Vernon, N. Y. Assets are said to be about \$50,000.

Continental Motors Corp. on Oct. 15 will pay a quarterly dividend of 1¼ per cent on its preferred stock.

New Receiver Named for Small Company

INDIANAPOLIS, Oct. 11—Bankruptcy proceedings against the William Small Co. of this city, manufacturers of the Monroe automobile, brought last August by the Warner Malleable Co., Hoess Brothers of Hammond, Ind., and the Columbus Bolt Co. of Columbus, were dismissed in Federal Court Oct. 7. Judge Anderson adjudged the company solvent and discharged the Union Trust Co. as receiver.

The ruling was made at a hearing on the petition of the Vonnegut Machinery Co. for authority to retake from the receiver about \$20,000 worth of machinery delivered to the William Small Co., under written conditional sale contracts.

Immediately following the ruling of Judge Anderson the Indianapolis Body Corp. filed a suit for receivership and Judge Solon B. Carter of Superior Court appointed James W. Fesler receiver for the company.

It is generally understood that this last suit for receivership was a friendly one, and that 85 per cent of the creditors of the Small company have agreed to give an extension of credit for one year. No definite plans have been announced, but it is thought that the receiver will put the factory in operation again.

Van Briggie Device in Receiver's Hands

INDIANAPOLIS, Oct. 11—The Van Briggie Motor Device Co., manufacturers of shock absorbers for Ford automobiles and carburetors, has been thrown into receivership on petition of eighteen stockholders of the company, including Frank Hilgemeier, vice-president, and several members of the board of directors.

Charges of a serious character were made against L. Howard Van Briggie, president and founder of the company, in the complaint which stated that "Van Briggie grossly mismanaged, wasted and dissipated funds of the company and applied sums to his own use despite objections of the board of directors."

The suit was filed in the Marion Circuit Court and Judge Harry Chamberlain appointed William R. Hirst receiver with authority to continue the operation of the plant.

REORGANIZATION PLAN PROCEEDS

NEW YORK, Oct. 13—Maxwell and Chalmers stockholders are making deposits of securities at such a rate there is reason to believe that the reorganization plan will go through. Time for depositing securities expires Friday. Some holders of Maxwell first preferred

are not entirely satisfied with the part they will play under the reorganization plan, but it is not believed their opposition will be sufficiently serious to interfere with the reorganization.

Bank Credits

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Oct. 14—The loss of \$3,250,000,000 in the indicated value of the cotton, wheat and corn crops since July 15, along with the continuing decline in other commodity prices, should tend to reduce the amount of bank credit necessary for the needs of the country, and may be considered, therefore, as an alleviating influence on money stringency as we approach the peak of the crop-moving season. The decline in prices of farm products since July 15 has been considerable and swift. On the other hand, there is a distinctly better tone in the investment market, with prices for securities with definite maturities moving inversely with general commodity prices.

Call money was not so plentiful last week as the week before, due largely to Government withdrawals. This was reflected in the manner of granting loans, however, rather than in the rates, which ranged from 7 per cent to 8 per cent, as against 7 per cent to 9 per cent the previous week. Little new money appeared in the time money market, but there was a better demand for short maturities. All-industrial paper commanded 8 per cent for 60 and 90-day paper and 7¼ per cent for longer maturities, as against 8 per cent to 8¼ per cent the previous week.

The statement of the New York Clearing House institutions reflects continued heavy drawings made on New York by the interior. The most noteworthy change, however, was the increase of \$47,243,830 in excess reserves over legal requirements. This makes a net excess of \$36,199,980, as against a deficit the week before. This was due chiefly to increasing credits at the Reserve Bank through rediscounts.

The New York Reserve Bank's reserve position again showed a slight decline, as a result of increased deposits and a decline in gold reserves of \$19,400,198.

The combined statement of the 12 Federal Reserve Banks indicates a less favorable technical position than for some weeks past. The ratio of gold reserves to Federal Reserve Notes, after setting aside 35 per cent against net deposits, was 46.9 per cent, as against 48.1 per cent in the previous week's statement. This was a direct result of a decline in cash reserves of \$6,927,000 and increases of \$64,340,000 in net deposits, \$34,091,000 in bills discounted secured by Government war obligations, and \$90,250,000 in total bills on hand. Total earning assets increased \$92,720,000, and Federal Reserve notes in circulation increased \$17,433,000.

Men of the Industry

W. J. Mattimore, who has been associated with Theodore Macmanus, Inc., advertising agency since the company was organized with the exception of a year in army service, has been appointed advertising manager of the Maxwell-Chalmers organization, succeeding Gordon Muir. Muir, who has been with the company about three years, has announced no future plans. W. D. Hurlburt, of the sales department, has been appointed assistant director of sales. Hurlburt, before joining the Maxwell-Chalmers organization, was manager of the Packard Motor Car Co. of New York.

J. C. Cunningham has been appointed general factory superintendent of the Briscoe Motor Corp. He was with the Canadian Products Co., Ltd., division of the General Motors Corp. as general superintendent before accepting the new position. Previous to that he had been with Cadillac. L. L. Wilburn has been superintendent in charge of production at Briscoe.

C. Floyd Greene, formerly sales manager of the Grant-Lees Gear Co., Cleveland, has resigned to become sales manager for the Ohio Motor Vehicle Co., manufacturer of the Ferris car. He was formerly with Lozier and Chalmers. He will be assisted in his new duties by L. H. Jackman, who has resigned from the axle division of the Standard Parts Co.

Arthur E. Warner has been made chief chemist of the Firestone Tire & Rubber Co., succeeding John Young who had been with the company six years. Warner, formerly chief chemist with Goodrich and Miller, was made acting chief three months ago, when Young went abroad. The latter, who has returned, has not announced his future plans.

R. C. Rueschaw, who resigned recently as vice-president of the Mitchell Motors Co., Racine, Wis., is understood to have accepted an important executive position in the organization of the General Motors Corp. Rueschaw went to Mitchell from Reo. His resignation has resulted in the appointment of John Tainsh as director of Mitchell sales.

Henry Marles, chairman of the Marles Steering Gear Co., Ltd., London, and inventor of the Marles steering gear which makes use of a cam mechanism, will sail for the United States about the end of October. His address while in this country will be care of F. S. Smithers & Co., 19 Nassau Street, New York.

Richard C. Aland has severed connections as illumination engineer with C. H. Wills & Co., at Marysville, and has formed the Motor Equipment Sales Co., of Detroit. Associated with him are William Loudon Reid and Richard S. Cowan, Jr. The company will engage in sales and engineering work.

L. C. Covell, former brigadier general with the 2nd Division in France, has been made Detroit district representative for Dodge Bros., in charge of sales for Northern Ohio, Northern Indiana and Michigan. Covell has been with the Dodge organization since his return from France.

T. P. Nickell, for several years service and sales engineer and equipment sales representative of the Splittorf Electric Co., has joined the sales force of the Jenkins Vulcan Spring Co. as special representative. Nickell was New England branch manager for Splittorf.

F. W. Hanneman has been appointed general superintendent of the Bohnet Body Co., Lansing subsidiary of the Briscoe Motor Corp. He was formerly in charge of closed body construction for Oakland and in other General Motors body plants.

Edward Casey has joined the Duff Mfg. Co. as the sales representative of the forge department in the East, with offices at 50 Church Street, New York. Casey was formerly associated with Kraenter & Co. and the Bethlehem Steel Co.

Le Roy Kramer has resigned as vice-president in charge of production of Willlys-Overland. He probably will be succeeded by W. H. Kilpatrick, who came to the Overland plant in the spring as works engineer.

W. D. McCartney, one of the organizers of the Standard Tank Car Co., has joined the Hoelzle-Ogden Motor Co., Sharon, Pa., as secretary and treasurer.

V. Jantsch has been appointed acting chief engineer in full charge of engineering department of the Briscoe Motor Corp.

Durant Organizes Banking Corporation

NEW YORK, Oct. 11—W. C. Durant, president of the General Motors Corp., has entered the investment banking field as head of the recently organized Durant Corp., incorporated Sept. 1 under the laws of New York State and capitalized at \$20,000.

The rapid growth of the stockholders' service division of the General Motors Corp., which was engaged in the work of more broadly distributing the corporation's securities and keeping shareholders informed on the activities of the corporation, has resulted in the organization of the Durant Corp. The new corporation is interested in the distribution on the part-payment plan of high-grade municipal bonds and the stock of ably managed industrial corporations of known worth. At the present time the corporation is specializing in General Motors common stock, but will shortly be in a position to handle other high-grade stocks and bonds.

Its officers are: W. C. Durant, president; P. D. Wagoner, vice-president and general manager; Carroll Downes, vice-president, and H. W. Alger, secretary and treasurer. The new corporation is not a subsidiary of the General Motors Corp., and is not controlled by that company.

PERKS AND MURRAY RESIGN

AKRON, OHIO, Oct. 11—The B. F. Goodrich Co. announces the resignations of George W. Perks, director of engineering, and W. Murray, chief auditor. J. W. Jordan, assistant auditor, who has been with the Goodrich Company ten years, has been named to succeed Murray. No successor to Perks has been appointed. Officers of the company decline to comment on the probability that A. B. Jones,

a vice-president who now is touring Europe, will resign upon his return in November.

DE PALMA TO CAPTAIN BALLOT

NEW YORK, Oct. 12—Ralph De Palma sailed to-day on the Aquitania for France to visit the Ballot automobile plant. He will captain the four Ballot racing cars which will be entered in the 400-mile Grand Prix on July 4, 1921. These cars have just been finished and are awaiting De Palma's road test. It is stated that they have a speed of over 100 m.p.h. Their piston displacement is 183 cu. in. To date De Palma and Chasagne are the only drivers that have been selected to operate the cars. De Palma expects to be back in the United States by Oct. 30.

H. T. Gardner Named Packard Sales Head

NEW YORK, Oct. 13—Harry T. Gardner, for the past year and a half executive secretary of the Automobile Dealers Association of this city, has been appointed sales manager of the passenger car division of the Packard Motor Car Co. He will go to Detroit Oct. 25 to take up his new duties. Before coming to New York Gardner was secretary of the Syracuse Automobile Dealers Association. Previous to that time he was connected for several years with the Franklin Automobile Co. at Syracuse, first as traveling service representative and later as a factory foreman.

Fritz to Be Manager of New Jobbing Group

CHICAGO, Oct. 13—George Fritz, for several years a secretary for the Automotive Equipment Association, will, beginning Jan. 1, manage a new group in the jobbing trade known as the "Research Club." Thus far the group includes about a dozen members, but there is no limitation to the number, except that members must be non-competitive.

The club is a copy of an institution that has existed for some time in the dry goods field. Its object is efficiency. Members of the club meet with individual members, go over the business methods of the member and suggest means for decreasing costs and improving business. So far several members have made substantial savings through the club, which has been in operation but a few months. It is expected that a headquarters will be maintained in this city.

M. B. JOHNSON DIES

CLEVELAND, Oct. 14—Services for M. B. Johnson, chairman of the board of the White Motor Co., were attended here to-day by many men prominent in the industry. As a lawyer Mr. Johnson became affiliated with the White Sewing Machine Co. when it came to Cleveland in 1886. He became a director and when the White Motor Co. was established was made chairman of the board.

Calendar

SHOWS

- Oct. 16-26 — Atlanta, Annual Automobile Show in Conjunction with Southeastern Fair.
- Nov. 14-21—New York, Automobile Salon, Commodore Hotel Ballroom.
- Nov. 15-20—Chicago, Automotive Equipment Show, Coliseum, Automotive Equipment Association.
- Dec. 10-18—New York, Motor Boat Show, Grand Central Palace.
- Jan. 3-8 — New York, Motor Truck Show, Motor Truck Ass'n of America, Twelfth Regiment Armory.
- Jan. 8-15—New York, National Passenger Car Show, Grand Central Palace, Auspices of N.A.C.C.
- Jan. 14-21—Milwaukee, Annual Automobile Show, Milwaukee Automobile Dealers' Ass'n.
- Jan. 29-Feb. 4 — Chicago, Na-

tional Passenger Car Show, Coliseum, Auspices of N.A.C.C.

- Feb. 5-12—Minneapolis, Annual Automobile Show, Minneapolis Automobile Trade Ass'n.
- Feb. 6-12—Columbus, National Tractor Show, Columbus Tractor & Implement Club, Ohio State Fair Grounds.
- Feb. 12-19—Kansas City, Annual Automobile Show, Kansas City Motor Car Dealers' Ass'n.
- Mar. 12-19—Boston, Annual Automobile Show, Mechanics Bldg. and South Armory.

FOREIGN SHOWS

- October—London, Commercial Vehicle Show, Olympia.
- Nov. 4-13—London, International Motor Exhibition, Society Motor Mfr's and Traders, Ltd., Olympia and White City.
- Nov. 6-13—Christchurch, N. Z.,

Olympia Motors Exhibition.

- Nov. 29-Dec. 4—London, Cycle and Motorcycle Show, Cycle and Motorcycle Mfr's and Traders Union, Ltd., Olympia.

Jan. 7—Sydney, Australian Motor Show.

Jan. 22-29 — Colombo, Ceylon Motor Show.

CONVENTIONS

- Oct. 19—Atlantic City, Meeting of Automobile Accessories Branch, National Hardware Ass'n, Marlborough-Blenheim.

Oct. 20-22 — Atlantic City, Twenty-seventh Annual Convention National Implement and Vehicle Association, Hotel Traymore.

- Nov. 9-11 — Cleveland, Service Managers' Convention, National Automobile Chamber of Commerce.

Nov. 30-Dec. 3—St. Louis, Third Annual Meeting and Exhibition, Automobile Accessories Branch, National Hardware Ass'n.

Dec. 7-10—New York, Annual meeting American Society of Mechanical Engineers, Engineering Societies Building.

Dec. 8-9 — Cincinnati, Annual Convention, Ohio Automobile Jobbers' Association

Dec. 28-30 — Chicago, Annual Meeting American Society of Agricultural Engineers.

Jan. 11-13—S. A. E. Annual Meeting, New York City.

RACES AND TOURS

Nov. 25—Los Angeles, Thanksgiving Day Speedway Classic, Beverly Hills Speedway.

Railroad Propaganda Hits at Truck Growth

YOUNGSTOWN, Oct. 9—Quantities of anti-truck and anti-highway propaganda are being offered to country, city and farm newspapers in this territory. Some of it is finding its way into the news columns of the leading daily papers. It is carefully written material but should not beguile a watchful news editor who is in touch with the automotive industry. The Youngstown Automobile Dealers Association has throttled most of this stuff, but one sample of this propaganda, which crept into print in one of the Youngstown dailies, under the heading "Trucks for short hauls not opposed by railroad men," is as follows:

"If it was expected that railway managers would be disturbed by the increased use of motor trucks for freight transportation, recent publication of the opinion asked from many of them shows this wrong, says the Railway Review. They do not view with alarm any prospect of competition in the short haul; on the contrary, they look on the rise of motor trucks for such purposes as contributory feeders and relieving the railways of a traffic which is expensive and often embarrassing. They look for further development with interest, knowing that immediate and temporary experience is very different from the long time and permanent.

"But there is a phase of the subject which is of vast importance to the public which at enormous first-cost is providing the highways to be worn out by this trucking. Ways and means for providing good roads are agitating the people who must pay for them by taxation. With a vast burden of this first cost lying on their shoulders they are still calling for more roads. The cost of repairing and keeping these roads in order will be an ever-increasing burden.

"The imposition of a tax upon the truckers based on ton mileage would be only just. In fact if this business con-

tinues to grow as it is doing some such measure will have to be resorted to. That would largely offset much of the advantage claimed for the system."

New Bus Corporation Outgrowth of Bethlehem

NEW YORK, Oct. 6—The Trackless Transportation Co., recently formed to foster the use of motor buses throughout the country, is an outgrowth of the plans announced by the Bethlehem Motors Corp., back in August. At that time the Bethlehem engineers were working on the design of the bus bodies and a chassis that embodied several new features. The appointment of a receiver as the result of financial difficulties automatically cancelled all functioning as far as the Bethlehem plans were concerned.

H. Y. McMullin, upon whom had been placed the burden of designing the bus as well as working out the details connected with a countrywide study of transportation conditions, has continued the work started at the Bethlehem plant through the formation of the Trackless Transportation Co., with offices at 30 Church Street, this city. McMullin has taken with him a number of former Bethlehem men, directly connected with the bus work.

Plans are now under way for the manufacture of a thirty-passenger bus, especially designed to meet the requirements of passenger transportation.

NEW CARS TAKE SALON SPACE

NEW YORK, Oct. 8—Among the American cars which have been added to the list of exhibits at the annual automobile salon which will be held at the Hotel Commodore Nov. 14 to 21, are the Packard, Pierce-Arrow and Winton. Foreign automobiles returning to the salon after an absence of several years are the Panhard and Minerva. The Chicago salon will be held early in January in the grand ballroom of the new Drake hotel.

Aeromarine Organizes Cuban Mail Service

NEW YORK, Oct. 11—A consolidation of the Aeromarine Engineering & Sales Co. with the Florida-West Indies Airways, Inc., has been effected. The new organization will be known as the Aeromarine-West Indies Airways, Inc. It will operate a fleet of six large Aeromarine navy cruisers in the Key West-Havana service, carrying passengers and mails. It is estimated that mail deliveries will be advanced twenty-four hours with the flying boats. The contract with the post office department, which was signed recently, entails a daily service each way.

The flying boats are equipped with radio apparatus, and will be in constant communication with land. The machines will be launched in New York before Nov. 1 and flown to their station at Key West. Hangars and repair shops have been completed at Key West and those at Havana are nearing completion.

Approximately 500 lb. of mail will be transported daily back and forth, an average of 21,000 letters. The service has contracted to depart for Cuba within thirty minutes after the arrival of the Northern mails, which arrive in Key West usually at 5 p. m.

Equipped with two Liberty engines of 400 hp. each, these boats have an average speed of 80 m.p.h. They have a wing spread of 104 feet.

TO SPEAK AT N. I. V. A. MEET

CHICAGO, Oct. 12—Prof. J. B. Davidson of the Iowa College of Agriculture and Mechanic Arts, Ames, Iowa, and secretary of the American Society of Agricultural Engineers, will present an address on standardization Oct. 20 before the convention of the National Implement & Vehicle Association at Atlantic City. George Collins, a San Francisco member of the society, also will address the convention.